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BOTANY
OF
THE FÆRÖES

BASED UPON
DANISH INVESTIGATIONS

PART I

ILLUSTRATED WITH 10 PLATES, AND 50 FIGURES IN THE TEXT

(PUBLISHED BY AID OF THE CARLSBERG FUND)



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Part II will contain: Marine Algæ; Marine Plankton; Marine Diatoms; Vegetation on Land and in the Sea; Agriculture and Gardening, etc.

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HISTORICAL NOTES ON THE BOTANICAL INVESTIGATION OF THE FÆRØES

BY

EUG. WARMING.

THERE are hardly any records concerning the vegetation of the Færøes earlier than the 18th century; as what *Lucas Debes*, Rector of Thorshavn (1651), tells us is very little. But we have a few notes on the subject dating as far back as the latter period of the 18th century. Thus two Færøese plants — *Scilla verna* and *Anagallis tenella* — are figured and described in the *Flora Danica* for the years 1771 and 1794 respectively, and later on several others were figured, especially after *Lynghbye's* visit to the islands. In the years 1781—1782, *Jens Kristian Svabo* visited the Færøes at the instance of the Danish Government for the purpose of investigation, with a view to publishing a physico-economical description of the islands. His MS., consisting of seven large volumes in quarto, has never been published, but it is to be found in the Royal Library, Copenhagen. In it he deals amongst other things both with the plants and with the agricultural conditions of the Færøes.

Nicolai Mohr, a native of the Færøes, is said to have studied botany, but his *Natural History of Iceland* (1786) contains only a very few notes on plants from the Færøes.

In 1800 a larger work on the subject was published by *Jorgen Landt* — for several years a clergyman in the Færøes — who while pursuing the divinity course in Copenhagen had also made a study of botany. It is generally supposed that Mohr contributed to this work, and also that Landt in writing it made considerable use of Svabo's MS. He enumerates in it over 300 species of plants, some of which must, however, according to *Rostrup* and the new investigations be omitted or at least considered doubtful.

The next and more important contribution to our knowledge of the vegetation of the Færøes we owe to the well-known algologist *H. C. Lyngbye*, who visited the Færøes in 1817. The results of his investigations with regard to the Algæ were published in his »Hydrophytologia Danica« and in Horneman's »Dansk Plante-lære« (vol. I. Copenhagen 1821, vol. II. 1837).

In 1821 *W. C. Trevelyan* spent 5 months in the Færøes, traversing the islands partly in company with the Danish geologist, *J. G. Forchhammer*; but it was not until 1835 that he published his notes on the flora of the Færøes based partly on his own and partly on Lyngbye's collections. In these notes the number of phanerogams and cryptogams is brought up to 573.

In 1831 the well-known traveller and collector, Count *F. C. Raben* of Aalholm made the tour of the islands; his diaries (June 24th—Oct. 23rd) have not been published, but they are to be found in the archives of his estate. (See Ostenfeld I. p. 149).

Contributions of a different order were made by *Ch. Martins*, the naturalist of the Corvette »La Recherche«, which visited Thors-havn 25th—30th June 1839, whence he made shorter excursions to Sandö og Nolsö. Besides an uncritical list of plants, he gives us the first general phyto-geographical comparison of the floras of the Færøes, Iceland and the Shetland Isles, from which he draws hypothetical conclusions concerning the origins of the Færøese plants.

With the exception of a good, popular description of the natural features of the Færøes by *P. A. Holm* (1855), 30 years passed before any really new contribution was made towards the knowledge of the vegetation of the Færøes; when in 1867 the Botanical Society in Copenhagen set on foot the first systematic botanical investigation of the islands. On behalf of the Society *E. Rostrup* (the well known mycologist, now Doctor of Philosophy and lecturer at the Veterinary and Agricultural College, Landbohøjskolen, Copenhagen), and *C. A. Feilberg* (medical student, now Professor) made researches on the islands in the same year, Feilberg from the middle of June to the beginning of October and Rostrup from July 22nd to Sept. 2nd. Only some smaller islands were left unexplored. In »Botanisk Tidsskrift« (1870) Rostrup made a critical revision of all earlier lists of plants and of the collections in Copenhagen, and in co-operation with some specialists published an entire list of the flora of the islands, based partly on the revised

lists of plants and collections, and partly on his own collections and investigations. He also gave the first oecological description of the vegetation, besides a comparison of the Færøese flora with those of the nearest adjacent lands. The number of phanerogams was now brought up to 309 and that of cryptogams to 612.

In the following 25 years only a few stray contributions were made, partly by residents in the islands, e. g. *Müller*, judge and revenue officer (Thorshavn); *Kissmejer*, district-physician (Vestmanhavn); *Patursson*, agriculturist (Kirkubö), whose collection of algæ was determined by N. Wille; and partly by visitors who spent a shorter or longer time on the islands, e. g. *A. Feddersen* (Aug. 1886 at Klaksvig on Bordö); Dr. *Keilhac*, the German glacial-geologist (1883); the Misses *Copland* and *Birley* (1890); and *H. C. Moller*, medical student (1889).

But in 1895 new investigations which had long been contemplated were carried into effect at the same time as the Danish General Staff were visiting the islands for the purpose of surveying and making charts. Those — in most cases specialists — who took part in these new investigations were the following: — *F. Børgesen* and *H. Jonsson* (algæ); *Chr. Jensen* (mosses); *J. Hartz* (lichens); *C. Ostenfeld* (phanerogams); and *Eug. Warming* (biological investigations, oecology). The researches were carried on in the following order: —

1895. *F. Børgesen* from June 8th to July 21st.

1896. *Chr. Jensen* from May 7th to Aug. 15th and *F. Børgesen* from May 7th to June 15th.

1897. *C. H. Ostenfeld*, *J. Hartz* and *Eug. Warming* from July 15th, the latter to Aug. 8th, the others to Sept. 4th; and *H. Jonsson* from Oct. 26th to Dec. 9th.

1898. *F. Børgesen* from April 4th to June 16th.

1899. *F. Børgesen* from June 24th to July 16th.

1900. *F. Børgesen* from June 1st to June 24th.

All the islands were investigated, including the Nordreöer which had previously been very little examined and were now explored especially by *Ostenfeld* and *Hartz*.

The investigations embraced all the different branches. With regard to the marine algæ, *F. Børgesen* visited numerous stations along the coasts and in 1899 and 1900 he dredged the deep seas from a cruiser stationed there for the protection of the fisheries.

Besides the contributions to the flora brought home in these

years by occasional visitors, e. g. Ostenfeld from his visits to the islands in 1895—96 as a member of the Danish Deep-Sea Expedition in the »Ingolf«, and the officers belonging to the Danish General Staff, among whom we may mention Lieut. *Lomholt* and Lieut. *Heiberg-Jürgensen*, a Swedish botanist, *H. G. Simmons*, also wrote several important papers on the flora and made the first attempt at a description of the algæ-vegetation with regard to its formations. He visited the Færøes in 1895, somewhat later than Börgesen and traversed the islands partly in company with him and partly alone from July 12th to Sept. 13th. He made collections especially of marine algæ.

I may also mention that the above-named visitors to the islands in 1895—1900 took photographs of the vegetation and landscape, and the officers of the General Staff, especially Captain *K. Rimestad*, also took a series of excellent photographs of the islands.

On the basis of this rich material we have thoroughly revised the list of the flora and studied the vegetation of the Færøes.

The writings of the above-mentioned authors and some others are named in the following list only in so far as they deal with the whole of the flora or the nature of the isles, papers treating of single classes of plants being mentioned under these classes.

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GEOGRAPHY AND TOPOGRAPHY

BY

C. H. OSTENFELD.

Introduction. Far out in the North Atlantic Ocean, between Scotland and Iceland, lie the Færøes, a small group of islands. They lie here completely isolated where the warm waters of the Atlantic mingle with the cold polar current from off the east coast of Iceland; hence the frequent fogs which envelop the islands and are a terror to sailors on account of the dangerous cliffs, which are entirely concealed from their view by the wet mist. Storm and rain predominate here and only rarely are the islands seen in calm, clear weather. But on these occasions the view is most lovely. Nobody who has stood on one of the mountain heights on a bright summer day and let his eyes wander over the numerous isles and the narrow sounds with their smooth, blue surfaces, can easily forget the sight. The sharp, fantastic cliff formations, their blackish-brown rocks alternating with the gently sloping sides clad with fresh-green vegetation, stand out harmoniously and yet clearly against the deep blue waters of the ocean and the azure sky; no land is to be seen on the horizon and only at rare intervals does a solitary sail become visible. On a day like this one can understand how the old Norsemen in their pursuit of freedom and independence came to settle down here and inhabit these islands. It is the descendants of these Norsemen who form the greater part of the population at the present day. On Syderö, however, an Irish (Celtic) element can distinctly be traced and according to old writings, the Irish were the first to inhabit the islands. They are said to have been entirely driven out by the Norsemen, but this statement is contradicted by the fact that the inhabitants of Syderö are small and dark, while the majority of the inhabitants of the other islands are tall and fair.

The population of the Færøes is about 15,000. Politically, the islands belong to Denmark, forming a province (Amt) administered by Danish officials. When the Færøes lost their independence (about 1035) they were incorporated with Norway and continued so even after Norway was united to Denmark, and not until 1814, when Norway was ceded to Sweden, did the islands become more closely united to Denmark.

Geography. The group of islands extends from $62^{\circ} 24' \text{ N. Lat.}$ to $61^{\circ} 26' \text{ N. Lat.}$ and from $6^{\circ} 15' \text{ W. Long.}$ to $7^{\circ} 41' \text{ W. Long.}$



Fig. 1. *Lille Dimon*. *Syderö* in the background. (After a photograph by F. Børgesen).

and the distances from the neighbouring shores are as follows: — from the Shetlands about 300 km., from Scotland about 375 km., from Iceland about 450 km. and from Norway upwards of 600 km. The islands are 18 in number (of which 17 are inhabited), besides some small islets. Most of them are elongated in form and lie from N. W. to S. E.; all those to the north lie alongside each other on a line about 75 km. in length from E. N. E. to W. S. W. Of these, those lying farthest east (*Fuglö*, *Svinö*, *Viderö*, *Bordö*, *Kunö* og *Kalsö*) are known as the *Nordreöer*; west of these are *Österö*, *Strömmö* with *Nolsö*, *Hestö* and *Koller*, and *Vaagö* with *Myggenæs* adjoining it on the west. To the south of this group, nearly due south from *Strömmö* lie *Sandö*, the islets *Skuö*, *Store Dimon* and *Lille Dimon* and the large and most southerly island *Syderö*. The extent of the whole group of islands from north to south is some 112 km. Lastly, some 5—6 km. from the

south coast of Syderö a small rocky islet, called *Munken*, rises out of the sea, tapering upwards to a point. As all these islands taken collectively only cover an area of some 1325 square km. the separate islands must necessarily be small, and only a few of them exceed 100 square km.: the largest, Strömö, is 373,5 square km.; then follows Österö with 286 square km.; Vaagö 178 square km.; Syderö 153 square km.; and Sandö 114 square km.¹



Fig. 2. *Nolsö*. The east part of the island; the Nordröer in the background.
(After a photograph by F. Borgeisen).

Nature of coast. The nature of the coast differs considerably on different sides of the islands; to the north and west, the slopes are steep often rising vertically from the sea to a height of 4—500 m., thus making the coast nearly inaccessible (Fig. 2); the precipitous sea-cliff on the west side of *North-Strömö*, where, e. g. *Mylingen* rises almost vertically from the sea to a height of 6—700 m., is particularly imposing; this is also the case with *Kodlen*, a cliff at the north end of *Österö*. The west coast of *Sandö* is further quite inaccessible, and along the whole of the long narrow west coast

¹ Nearly all the figures given in this part have been taken from an article »Færøerne« in Salomonsen's »Ill. Konversationsleksikon«, vol. VII. 1897, p. 343 (Jakob Jakobsen) and from Lomholt, »Færøerne« in »Nord og Syd« 1898.

of *Syderö* there are only three places where a landing can be effected. Characteristic of these precipitous north and west coasts facing the open sea are the numerous isolated rocky islets — the so-called »*Drangar*« — which occur along them, and of which, e. g. »*Risen*« and »*Kællingen*« (the giant and the old woman) are well-known. Here we may also mention that on the way to Saxen on North-Strömö, there is an extensive view into a narrow inlet bounded on the one side by the lofty, precipitous coast and on the other by an isolated wall-like rock.



Fig. 3. *Sandö*. A flat stretch of sand in the curve of *Sandsbugt* (Sands Bay). The sea in the background with *Lille Dimon*, *Store Dimon* and *Sküö*. (After a photograph by O. Effersöe).

Very different is the character of the east and south coasts, which are indented by numerous fjords of varying depths; the cliffs as a rule slope gently down to the shore, and even if inaccessible places occur rather often they are less in extent and not so lofty and imposing. The southern part of *Österö* and *South-Strömö* are typical examples of the more rounded forms which the islands attain here where they are more sheltered and where the force of the waves is less felt on account of the geological structure of the country (se Figs. 3, 13, 16).

Physiognomy of the mountains. The peculiar feature of the mountains themselves is their terraced character; they look as if they had been constructed by piling flat blocks upon each other, beginning with the largest and ending with the smallest, the sloping sides thus forming a jagged line of terraces while the top is a plateau (Fig. 6). Almost all the mountains on the *Færöes* exhibit this appearance, as upper plateaux occur nearly always, even on the highest, and

the mountains terminate in crests or peaks only on the narrow islands (se Fig. 17). The slopes consist of steep walls of bare brown rock, the so-called »Hamre«, broken by ledges, which latter however are not flat but sloping, on account of the fallen blocks and débris which have accumulated there in as large masses as the law of gravitation will allow. These slopes which alternate with the steep walls of brown rock (Hamre), are called »Lier« or »Brækker« (Figs. 4, 5). In the course of time such quantities of rough débris have accumulated in



Fig. 4. *Strömö, Stigafjeld* seen from N. W. The top part of the mountain consists of numerous terraces of basalt rock. Below these débris and detached pieces of rocks are lying in wedge-like masses on the hill-side. Further down again basalt rocks are distinctly seen and gently sloping hill-sides (Li). From the middle of the foreground and to the left runs the top cleft of *Dalagjov*.

(After a photograph by K. Rimestad).

the lower parts of the mountains as to conceal with a few exceptions all the »Hamre« and to form slopes which are generally clothed with grass. But higher up the steep brown walls of rock are almost always conspicuous and on the intervening sloping ledges, made up of loose débris a solitary plant is only rarely to be found. As a rule the basal part of the mountains up to a height of 3—500 m. have rounded contours or outlines and are covered with grass. Above this basal part tower the bare, lofty, isolated rocks separated by passes (Skard) of which only a few are at a higher elevation than the above-mentioned grassy base. The passes occur at the

lowest elevations on Syderö and Sandö and at the highest on the Nordreöer, North-Strömö and North-Österö, and the same applies to the relative heights of the mountains. The greatest elevation is reached on Österö, *Slattaratind* attaining a height of 882 m. Some



Fig. 5. *Strömö*. Terrace of basalt rocks (Hamre) on the S. W. of *Stigafjæld*. The rock is alternately sloping and vertical. The lowest slope is the longest, the top ones are but very imperfectly developed. (After a photograph by K. Rimestad).

other high mountains are *Villingedalsfjæld* on Viderö (844 m.), *Nakken* on Kunö (820 m.), *Blankeskaalefjæld* on Kalsö (742 m.), *Rejafjæld* on Österö (765 m.), and *Skjællingefjæld* and *Örvesfjæld* on Strömö (768 and 784 m.). On Sandö and Syderö none of the mountains are above 600 m. (*Nakken* and *Kvannafjæld* on Syderö go up to some 550 m.).

Partly on account of the greater height and steepness of the mountains which only allow of smaller low-lying areas between

them, and partly because the grassy slopes do not extend so far up, the northern islands have a gloomier and more sullen aspect (Fig. 6) than the southern with their rounded outlines and green vegetation.

Sounds and fjords. The islands are separated by narrow *sounds* and penetrated by *fjords*, both of which must be regarded as



Fig. 6. Viderö. *Malingsfjeld* (750 m.) partly snow covered. The church spire rises out of the deepest part of the valley. Higher up enclosed fields with ditches. Then gently sloping hill-sides up to about 300 m. Small plateau at the top and numerous basalt terraces. (After a photograph by K. Rimestad).

submerged valleys. Most of the sounds occur between the northern group of islands, as, e. g. the long sound, *Sundelaget* between Strömö and Österö; *Kalsöfjord* between Kalsö and Kunö; *Haraldsund* between Kunö and Bordö and *Kvannasund* between Bordö and Viderö. The fjords occur mostly on the east coast of Syderö and Strömö and on Österö and Bordö; the longest fjord is *Skaaleffjord* on Österö.

Valleys. There are also many *valleys* among the mountains; they may be divided into two classes: — long valleys or hollows

(Langdale) and cirque-valleys (Bunddale). The latter class consist of smaller valleys which terminate in an amphitheatre; they are framed in by walls of rock on three sides and open on the fourth. As already mentioned, these walls of rock slope upwards in successive terraces thus forming a corresponding succession of valleys rising tier upon tier, bounded by encircling or elliptic walls of rock, and gradually broadening until the highest plateau is at length reached, the whole valley thus resembling a huge amphitheatre. As examples of typical cirque-valleys we may mention *Kvanhaugen* (Fig. 8) and *Hovedalen* on Syderö.



Fig. 7. Syderö. *Kvalbødalen* (the valley of Kvalbø). Showing the rectory in the foreground, the sandy interior of the fjord, and the dale sloping gently upwards. (After a photograph by K. Rimestad).

Now, if we suppose the head of the cirque-valley to have been removed, e. g. by marine erosion, the valley will be open at both ends, the bottom at the end originally open forming the lowest part of it, and the whole sloping upwards towards the head which has disappeared, whence there is a steep and abrupt descent to the sea. In this way must have been formed the greater part of the broad hollows (Ejder) which cross the islands extending from the heads of the fjords. Syderö especially abounds in such broad valleys or hollows (Ejder), its narrow alongated form, its indented east and unbroken west coast doubtless accounting for this fact (Fig. 7).

But all the Ejder are not broad valleys like the above; a few of them must be classed under the head of long valleys (Langdale). The long valleys extend across the islands in longer or shorter hollows; the highest point, a flattened col or water-parting, generally occurs

in the middle of the valley which slopes downwards from it on either side and often terminates in the head of a fjord. These long valleys have doubtless been formed by two cirque-valleys the heads of which have coalesced, the rock-barrier which at once separated the valleys and formed their heads having been demolished in course of time, leaving the low flattened col or water-parting. As examples of long-valleys or hollows proper may be mentioned *Skaalefjorddalen* on *Österö* leading from the head of *Skaalefjord* to the head of *Fundingfjord*, its highest elevation being only 60 m.



Fig. 8. *Syderö. Kvanhaugen* seen from a cleft of rock above the valley. Shows the typical cirque-valley with its lake; the inner side of which has flat sandy shores, while the outer side is bound in by cliffs. The sea in the background. (After a photograph by Warming).

above sea-level. Another long hollow occurs on *Strömö* crossing the island between *Kollefjord* and *Kvivig*, its water-parting being some 100 m. high. If the islands were partially submerged to a depth of some 100 m., *Österö* and *Strömö* would be divided each into two separate islands. In *Bordö* even less would be needed to convert *Klaksvig* and *Bordövig* into a sound, which would isolate the southern part of the island, as the hollow (*Ejde*) which connects these two inlets (*Vigs*) is very low (some 10 m.) This valley belongs to the few *Ejder* which may be described as long-valleys.

While most of the fjords are submerged cirque-valleys, the sounds are submerged long hollows, and *Sundelaget*, e. g. need only be raised some 10 m. to connect *Österö* and *Strömö*, as its lowest part is

6—8 m. below sea-level. The other sounds are also of the same nature.

Streams. In all the valleys there are streams and collections of water, none of which however attain to any considerable size on account of the short distances. The numerous *small streams* are



Fig 9. *Syderö*. *Kvanhaugen* seen from the lake. Showing the steep, but gently sloping cliff, at the top the vertical basalt rocks. (After a photograph by Warming).

fairly full of water, at least at times, and have an appreciable effect on the mountain slopes and the bottom of the valleys, as they carry down great quantities of débris and sand which accumulate in the latter (Fig. 9) and at the heads of the fjords, the shores of which are therefore sandy and flat (Fig. 7), while at some places, e. g. at Sands on Sandö such quantities of sand have accumulated as to have been formed by the wind into small downs (Fig. 3). The lower courses

of the streams usually flow gently and without sudden falls; only in a few places small waterfalls occur over a cliff which rises abruptly out of the sea, as at *Bosdalafos* on Vaagö, where the outlet from the large lake *Sörvaagsvatn* falls into the sea from a



Fig. 10. *Strömö*. Ravine (Gjöv) near *Vestmanhavn*. Showing the luxuriant plant-vegetation (*Angelica*, etc.) to the right. In the middle the stream falls down over a close succession of rocky boulders.
(After a photograph by Warming).

height of 15—20 metres. On the other hand, consequently, as the upper courses of the streams traverse sloping rock-surfaces, they flow more rapidly, their erosive action forming furrows, clefts and ravines in the channels (Fig. 10).

Lakes. The numerous *lakelets* which occur in the valleys have different forms corresponding to the form of the latter; in

cirque-valleys they are generally more or less circular. Sometimes the shore facing the open side of the valley is bounded by a rocky barrier, while the rest of the shore is sandy or gravelly according to the matter carried down by the streams (Figs. 8, 9). The lakes occurring in long valleys are elongated and are generally much larger than



Fig. 11. *Strömö. Dalagjov* (see Fig. 4). A ravine into which the sea-water flows. Sides of cliff almost bare of vegetation. (After a photograph by K. Rimestad).

those in cirque-valleys; among these larger lakes may be mentioned *Sandsvatn* and *Saltvågsvatn* on Sandö, *Leinumvatn* on Strömö, *Toftevatn* on Österö and the above-mentioned *Sörvaagsvatn*. Lastly, a third class of lakes occurs on the hill-plateaux, viz. small tarns, which are formed in low hollows in the rocks, and are properly speaking only large pools of water. I met with several such small

lakes on *Klubben* (Vardebakken) near Thorshavn and on *Gjerdum Rejn* on Bordö.

Ravines. The »Gjove« which are often spoken of as occurring on the islands, are large, long and deep clefts in the rocks (Figs. 10, 11). These ravines extend sometimes over large areas: thus a



Fig. 12. *Bordö* Cave in the cliff facing the sea. (After a photograph by F. Börgesen).

»Gjov« leads from *Selletræ* on *Österö* in an easterly direction to *Skaale* by *Skaalefjord*, i. e. right across a peninsula. Very often a stream flows in the bottom of a »Gjov«, but it is hardly possible that the stream should have worn away the »Gjov«, which doubtless originated in a splitting of the rock, though in the course of time the »Gjov« became widened by the action of the stream. Owing to the numerous small rock-ledges and the flowing water, these »Gjovs« (ravines) are covered with luxuriant vegetation (Fig. 10), and the damp

shady places which are found in them are well adapted to many plants. In consequence of this the »Gjovs« are the especial haunts of botanists; but even people who have no botanical interests mention them as abounding in flowers. Such are the »Gjov« near Vestmanhavn on Strömö and the »Gjov« near Vaag on Syderö.

Caves. Further may be mentioned the strange caves and clefts which cut into the vertical sea-cliffs, they -- i. e. the smaller ones -- are called »Latre« and they are formed by the erosive action of the sea. Sometimes the entrance is quite low, so low that they can only be entered in calm weather in a boat, but once inside, the gloomy cave rises high overhead, and the water beneath the boat exhibits strange and magnificent colours owing to the reflection and refraction of the light outside. Others are open and much larger (Fig. 12). At the foot of Villingedalsfjæld on Viderö is a large cave, called »Kirken« (the church), which is said to be so lofty that a shot discharged by a fowling-piece cannot reach its roof.

INDUSTRIAL CONDITIONS

BY

C. H. OSTENFELD.

Agriculture. A Færøese fjord-landscape has almost always a gloomy aspect; the mountain tops and the dark-green slopes are sombre, so, too, is the dark sea; amidst all this gloom only one bright spot shines out at times, during summer and autumn, viz: *the cultivated fields*. The Færøese generally live together in villages or hamlets (Bygder) which are almost invariably situated on the sea-shore; in spite of the fact that in many places a landing can hardly be effected, and then only in calm weather, the inhabitants still settle down as near as possible to the sea. The inhabited places are surrounded by a small cultivated area, the so-called »Bö« (pasture-land or enclosed fields), which is separated from the uncultivated land or waste (*Haugen*) by high stone walls (Fig.13). In choosing a site for habitation the first point taken into consideration doubtless was, whether the surrounding land were fit for cultivation; and considering the northerly situation of the Færøes, most of the inhabited places are surrounded by a considerable cultivated area. But agriculture is carried on under very primitive conditions; the Færøese are slow to adopt new methods, and it will doubtless be long before a more rational cultivation of the soil is introduced. The enclosures (*Bö*) consist of pastures, barley and potato fields, and here and there a small turnip field. The chief obstacle in the way of successful farming is the damp, swampy condition of the land, which has always first to be drained by means of numerous ditches, etc.

Meadows. What was formerly waste-land with its many small swampy areas and its vegetation of sedges, which is not of much use for cattle and sheep, has by means of this drainage been turned into meadows or pastures. The Færøese also dig the ground to make the grass grow, but as a rule they have no idea that grass

requires sowing, but expect it to grow of itself. The grass grown in this way forms the chief part of the vegetation; it embraces several species, but all alike are of low and slender growth, so the hay which they produce is fine, short meadow hay. Unfortunately its quality is not as good as it ought to be, partly because it is the custom to let the grass stand until it has done flowering — it often turns yellow before they begin to cut it; this of course allows of the grass growing as long as possible, but on the other hand it would contain more nourishment if it were cut when it began to flower. It is a common saying that grass must not be cut until



Fig. 13. Syderø. Trangisvaagffjord in winter; the whole country snow covered, with the stone wall around the village of Tværaa distinctly visible. (After a photograph by O. Effersøe).

»Olaidag« (July 29th). Another reason why the quality of the hay is poor is the perpetual rain which drenches the hay before there is any dry weather to make it possible to carry it. Thus it is not unusual to see hay standing in the fields as late as September or October. This latter cause of the inferiority of the hay seems to be beyond the power of man to prevent, but something could be done by cutting the grass somewhat earlier, as the latter part of the summer is more rainy than the earlier part.

The cultivation of corn and potatoes. When these pasture-lands are to be utilized for the cultivation of corn and potatoes, the earth is »turned«, i. e. the turf is cut or sliced off with a spade and laid with the grassy side downwards; the soil thus laid bare is hacked with a spade and then the corn is sown. Only very little barley is grown, and sometimes a little oats and it is

always difficult to get it ripened; it has often to be cut before it is ripe and then dried artificially, hence much corn is imported to the islands. Potatoes are generally planted after the barley, and they succeed fairly well, especially in sandy fields near the shore. After potatoes have been grown, the ground is left fallow, and the grass grows of itself. Thus, agriculture is on the whole in a very backward state in the Færøes and it is not of great value as a means of subsistence.

Horse, Cattle and Sheep-rearing. Cattle and sheep-rearing is of much greater importance. Large numbers of sheep are reared as well as some cattle and horses. On the 1st of July 1898¹, no less than 106,465 sheep, 4,516 cattle and 706 horses were found on the islands. The animals are not tethered, but go at large, hence the stone walls around the cultivated lands; only the cattle and horses are housed in winter, and in hard winters the inhabitants, consequently, sustain heavy losses through the great mortality among the sheep.

The large numbers of animals, especially sheep, produce such an effect on the whole of the vegetation, that the Færøes must have presented a very different appearance, when their earliest inhabitants settled down there some 1200 years ago. The sheep prevent all growth, the few willows which are found are nibbled and stunted; grass and other plants are hardly ever allowed to blossom and they only develop naturally in places where the sheep cannot go. The most luxuriant vegetation is therefore found on the terraces of basalt rocks, in ravines and on islets in lakes. On Syderö I waded out to an islet in a lake situated in a small valley, *Vatnsdal*. It was covered with a luxuriant bog vegetation consisting of bog-cotton and sedges, and all the plants were 50—75 cm. in height; they were in full fructification, so that seen from a distance the white heads of the bog-cotton lay on the island like snow-flakes. On the other hand the shore of the lake, where the soil and other conditions seemed to correspond to those of the islet, was covered with a close short carpet, of a height of 15—25 cm. and with a few widely scattered inflorescences. It struck me, that we might have been wading about in high, close grass, with intervening thickets of willows and juniper, if sheep and men had not kept it all down.

The Fisheries are of still greater importance to the inhabitants

¹ Taken from »Berlingske Tidende« November 23rd 1898.

than sheep-rearing. The Færøese fish along the coasts of their islands and also take part in the fisheries off the coast of Iceland.

A special branch of the fisheries is *whaling*. The Færøes are renowned for the flocks of ca'ing whales, *Delphinus globiceps*, («Grindehvaler») that visit their coasts and are driven into the fjords by the inhabitants and killed. Recently also two stations have been established for the capture of the large fin-whales, and the enterprise seems to be prospering.

Further there is *bird-catching* which is also very renumorative. The vertical sea-cliffs are inhabited by numerous sea-fowl, especially of the family Alcidae (guillemot, puffin, auk and the black guillemot). These are caught and kept for home consumption, but their down and feathers are sold and fetch high prices.

As already mentioned, the islands contain about 15,000 people. The chief town is the capital, *Thorshavn*, which is situated on the east coast of South-Strömö. Among the other somewhat larger villages may be named *Klaksvig* on Bordö, *Ejde* on Österö, *Midvaag* on Vaagö, *Vestmanhavn* on North-Strömö, *Sands* on Sandö and *Kvalbö*, *Tværaa* and *Vaag* on Syderö.

G E O L O G Y .

BY

C. H. OSTENFELD.

Tertiary rocks of the Islands. Viewed in the light of geology¹ the Færøes are not of great antiquity; the rocks of which the islands are composed belong to the Tertiary formation and are mostly of igneous origin. They do not show much variety only basalts being found in large beds intercalated with thin layers of tuff (Fig. 14). The beds are nearly horizontal, usually, however, with an inclination of 2° to 5° which on Myggenæs even rises to 10° . The dip of the strata varies somewhat on the different islands; in the southern part the direction is N. N. E., in the western part, due E., and in the northern part, S. E., thus forming part of a periphery the centre of which lies to the east of the islands. The most ancient of the islands are Syderö and Myggenæs, the coal-bearing strata which occur here are not found on the other islands, or if they are to be found at all, they must be sought for below sea-level. These coal-bearing strata are interbedded with basalt which belong to a somewhat different class of rocks from the other basalts. Geikie and Helland give it as anamesite; it is a close, grey-black, fine-grained cryptocrystalline rock. The greater part of the cliffs on Syderö consist of these anamesite-beds which in the south extend quite to the top of the mountains, while from about the middle of the island (from the

¹ In working up this subject the following books have been consulted:

G. Forchhammer: »Om Færoernes geognostiske Beskaffenhed«. Kongl. Danske Vidensk. Selsk. Skrifter. 1824.

Amund Helland: »Om Færoernes Geologi«. Geografisk Tidsskrift, vol. IV. 1880. Kbhvn.

James Geikie: On the Geology of the Farøe Islands. Transact. of the Royal Soc. of Edinburgh. vol. XXX. 1880.

See also *A. Geikie*: The Tertiary Basalt-plateaux of North-western Europe. Quart. Journ. Geol. Soc. vol. LII.

hills above Hovedalen) they are overlaid by later basalts or dolerites. The coal-bearing strata occur in the upper part of the anamesite-beds and consist of clay separated by thin layers of coal; the highest coal met with occurs on Kvanna fjæld, west of Hovedalen, at a height of some 500 metres; they reappear on the mountains to the north and are finally found north of Kvalbø at sea-level, following the dip of the beds, which as already mentioned, is N. N. E. Above



Fig. 14. *Strömö*. View from the neighbourhood of *Kirkebønæs*. Vertical faces of cliffs towards the sea. Showing the thin layers of tuff between beds of basalt. A smaller part of it is white with bird's dung (Shaw) besides showing small black striations (Algæ). (After a photograph by F. Børgesen).

the coal-bearing strata are found a smaller area of anamesite-beds (100—200 m. thick) and then the beds of dolerite. Many attempts have been made to utilize this coal on a larger scale; but all have failed, partly because the coal is of inferior quality, being extremely ashy, and partly because the situation makes the working and shipping of it difficult. At present the coal is worked for home use in some mines in the *Præstefjæld* south of Kvalbø where the layers occur at a height of some 150 metres above the sea. At the village of Kvalbø it constitutes the chief fuel and it is also carried over the mountains to the surrounding villages.

The above-mentioned beds of dolerite occupy the whole of the

remaining part of the group of islands, i. e. all the islands with the exception of a part of Syderö and Myggenæs. The dolerite is a coarsely crystalline basalt in which crystal of plagioclase is distinctly visible; it is usually porphyritic.

The beds of coal as well as those of anamesite and dolerite are separated by tuff-layers of various colours, chiefly red or blue-grey; as the tuff is easily decomposed, small, nearly horizontal partings answering to the tuff-layers are generally distinctly visible on the vertical faces of rocks (Fig. 14).

With regard to the age of the igneous rocks of the Færöes, very little is known. The coal-bearing strata contain remains of stems and branches, but plant-remains fit for determination have not as yet been found. Still we are justified in arriving at a conclusion as to their age by the fact that the perfectly analogous Icelandic formations are Tertiary and must be referred to the Miocene period of that era on account of the fossil plants (the so-called »Surtarbrand«) which are met with.

Of later origin than the general extent of basalt are the scattered sheets and veins of intrusive basalt, which are intruded among the beds. This intrusive basalt which occurs here and there is close and dark. At a few places, especially at Frodebö on Syderö, it appears in beautiful specimens of isolated prismatic columns (Fig. 15).

Ice Age and its Actions. Like most of the other northern countries, the Færöes have had their Ice age, distinct traces of which can be found on the islands. For the purpose of studying these traces, a minute investigation of the islands was made by the geologists *Geikie* and *Helland*. The usual characteristics of glaciation are striæ, roches moutonnées, moraines and rock-basins.

As basalt-rocks are rather liable to decomposition, striated faces are rarely met with, but some instances occur in places where the rock-surface has been protected by a coating of earth so that the atmosphere has not been able to act upon it. Fine striated faces are said to exist at Thorshavn on Strömö, at Ejde on Österö and at Sands on Sandö, but they are also found at other places, and further investigations will doubtless bring to light many more. The peculiarity of these striæ is that at each place they seem to have a different direction, a fact which will be explained later on.

The second glacial characteristic, roches moutonnées, is much more common on the islands; everywhere in the valleys and on the lower hills are seen these rounded formations, due

to the action of the ice; the country about Thorshavn, the whole of the south part of Österö and the neighbourhood of Sands (Fig. 16) present the aspect peculiar to a rocky landscape rounded off by the action of the ice.



Fig. 15. *Syderö*. The basalt columns at Frodebö. (After a photograph by W. Thulstrup).

Moraines are not of frequent occurrence, and only here and there are smaller deposits of morainic débris and scattered blocks to be met with.

Lastly, the rock-basins, i. e. hollows in the rock excavated by the action of the ice, are identical with the numerous previously mentioned cirque-valleys, which are characterized by the fact that the valley is deepest inside its entrance, or in other words, that

it contains or has contained a lake. In the course of time this lake has doubtless become filled up with fallen débris or matter. The numerous fjords are also rock-basins, as is demonstrated by the fact that they generally have a barrier across their entrance.

As previously mentioned, the direction of the striae varies considerably, which is also the case with that of the ice-flow, as the position of the »Stoss- and Leeseiten« of the »roches moutonnées« indicates. As the latter are far more numerous than the striae, they afford clearer evidence as to the glaciation. It must be noticed

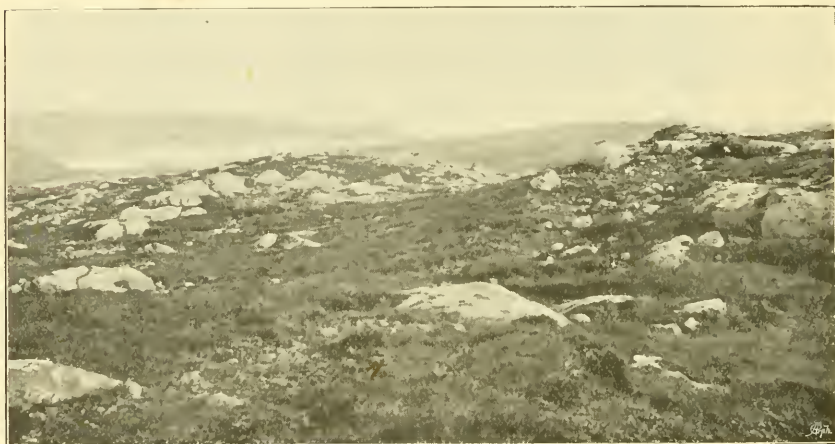


Fig. 16. *Sandö*. A stretch of heath near Sands, showing the roches moutonnées. The blocks of rock white with lichens. (After a photograph by C. H. Ostenfeld).

that the direction is from the mountains seawards through the valleys — in other words, *that the Færøes were covered by a separate ice-sheet*, which unlike the mer de glace of Shetland had doubtless no connection with the great Scandinavian ice-sheet. This local Færøese ice naturally forced its way through all the valleys and fjords which were thereby deepened. It must have been a huge mass, as the glaciated contours appear up to a height of some 500 metres but above that level there is no trace of glacial abrasion, it may therefore be assumed that this overlying part was covered by *névé* of which, however, there are no distinct traces remaining; it must moreover be remembered that the atmospheric erosion would make itself more felt at that height, so that any traces of *névé* which might have existed would have been obliterated.

Post-glacial erosion. As the ice-sheet gradually dissolved,

the land was laid bare and the usual erosive action began; the numerous torrents then formed by the dissolving glaciers were larger and more powerful than the existing streams so that they carried away immense quantities of detritus. Rain and frost acted upon the basalt — which in spite of considerable hardness is soon effected by weather — and broke it down, as it continues to do to the present day. Marine erosion, undoubtedly very powerful, also must not be forgotten. The islands were once upon a time much larger, and the sea must have played a prominent part in reducing their area. The



Fig. 17. *Österö*. View from «Stattaratinder» over the lofty mountain tops which form a crest with low curves. Débris lying in strips on the hill-sides. (After a photograph by the General Staff).

precipitous sea-cliffs bear distinct evidence of its erosive action, and the fact of the dip of the strata being towards N. E. and S. E. aids the sea from the west in its work of destruction, the tuff-layers being thus more easily acted upon and demolished which in turn brings about the fall of the basalt. The sea seized upon every weakness in the structure of the cliffs and undermined caves, and as it gradually widened the latter the roofs above them grew unsafe and at last gave way, which must account for the vertical faces of the shores and isolated rocks.

The entire structure of the land points to its having been much larger; thus the same beds may be traced from one island to another, either across a sound or from one side of the fjord to the other. On the other hand, there is no strong *geological* evidence to *prove* the theory, maintained, e. g. by *James Geikie*, that in post-glacial times Scotland, the Færöes and Iceland were connected,

forming a large belt of land. As no terraces of marine erosion are found on the islands and the caves invariable occur at sea-level it may be regarded as certain that the land is not rising: further as no platform occurs a little below sea-level, as might have been expected if the land had remained for a longer time at its present level, we may suppose that the land is sinking slowly. This sinking taken in connexion with the rapid destruction shows that, if the



Fig. 18. *Nolsö*. Talus of tumbled down blocks and débris (‘Ur’) at base of cliff on the eastern side.
(After a photograph by Warming).

present geological conditions hold, it is only a question of time when the Færöes will disappear, but a question which, humanly speaking, is so far off that it can have no great actual interest for us.

Peat. Lastly the peat, the latest geological formation of the Færöes, must be mentioned. Wherever there are small hollows in the ground mosses are found, but of no considerable size or depth, the greatest depth being about 1—1,5 metres. The peat consists of bog-plants, chiefly sedge and bog-cotton, but true *Sphagnum*-peat hardly occurs. As peat is the only fuel the inhabitants have except for the coal on Syderö it is of great economic value and fortunately it is found on almost all the islands, only some smaller islands, e. g. Fuglö being obliged to fetch it from other places.

The peat has never been investigated palaeontologically, but we know that it contains a fair number of pieces of juniper wood which shows that this shrub was formerly common on the islands though it is now very rare. On the other hand, Geikie is hardly right when he mentions that these sub-fossil woods prove that the climate was originally milder. The almost complete extermination of the juniper is doubtless due to the inhabitants and the domestic animals (sheep) and not to the deterioration of the climate.



CLIMATE.

BY

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THE climate¹ of the Færøes is that common to islands, and possesses all the advantages and disadvantages pertaining to an insular position: mild winters, cold summers, heavy rainfall, frequent storms and fogs.

Sea. The cause of the climate of the Færøes being peculiarly affected by their insular position is the warm Gulf Stream which washes their coasts and going to the east of them, flows for some distance northwards. But sometimes the cold polar stream from off the east coast of Iceland reaches so far south as to touch at any rate the northern coasts of the islands. This alternation naturally enough also contributes towards the changeable nature of the climate, as will be seen later on. — The sea surrounding the islands is always free from ice, and even the still deep fjords are very seldom frozen over and then never for a long period at a time. The mean temperature of the sea at Thorshavn from January-March is $5^{\circ} 5$ and from July-September $10^{\circ} 3$, and the annual mean temperature is $7^{\circ} 8$. (For further details I may refer to the accompanying table in which I have given some meteorological data, a part of which I have taken from the above-mentioned paper by Willaume-Jantzen, while for some I am indebted to the Meteorological Institute in Copenhagen).²

Temperature of the air. If the temperature of the sea be compared with that of the air it will be seen that in the three summer months only, June, July and August, the temperature of the sea is the lower; in the remaining nine months it is therefore

¹ See Willaume-Jantzen, »Færøernes Klima«, Geografisk Tidsskrift, 15. Aarg. 1899.

² See also H. Mohn, »Klima-Tabeller for Norge. I. Luftens Temperatur«, Kristiania 1895.

Thorshavn, 25 years	Janu- ary	Febru- ary	March	April	May	June	July	August	Septem- ber	Octo- ber	Novem- ber	Decem- ber	Annual
Mean temperature	3 ⁰²	3 ⁰⁴	3 ⁰²	5 ⁰⁵	7 ⁰²	9 ⁰⁷	10 ⁰⁸	10 ⁰⁷	9 ⁰³	6 ⁰⁶	4 ⁰⁸	3 ⁰⁴	6 ⁰⁵
Actual highest temperature } of the air, C ^o	12 ⁰³	10 ⁰⁸	13 ⁰⁵	14 ⁰⁰	18 ⁰⁰	19 ⁰⁷	21 ⁰²	20 ⁰⁶	16 ⁰⁴	14 ⁰⁴	12 ⁰⁰	11 ⁰⁸	21 ⁰²
Actual lowest temperature	-9 ⁰⁶	-10 ⁰⁹	-11 ⁰⁶	-8 ⁰⁵	-4 ⁰⁰	-0 ⁰⁹	1 ⁰¹	1 ⁰⁵	-3 ⁰⁹	-5 ⁰⁶	-9 ⁰⁶	-10 ⁰⁵	-11 ⁰⁶
Number of days of frost, average	12	11	12	6	3	0, 2	2	2	0, 4	4	8	12	69
Mean temperature of the sea, C ^o	5, 6	5 ⁰⁴	5 ⁰⁵	6 ⁰⁵	7 ⁰⁷	9 ⁰²	10 ⁰²	10 ⁰⁶	10 ⁰¹	8 ⁰⁸	7 ⁰⁵	6 ⁰³	7 ⁰⁸
Percentage of moisture, average	82	80	78	79	80	83	85	85	85	83	83	81	82
Amount of cloud (0-10), average	7, 5	7, 2	7, 1	7, 0	7, 3	7, 3	7, 9	7, 9	7, 5	7, 5	7, 4	7, 5	7, 4
Cloudy days, average	15	12	13	12	15	14	18	19	15	15	15	15	178
Sunny days, average	0, 3	0, 2	0, 3	0, 7	1, 0	1, 3	0, 3	0, 8	0, 5	0, 2	0, 5	0 ⁰²	6
Rainfall (millimetres), average	183	146	145	88	91	79	92	101	135	176	175	182	1593
Number of rainy days, average	28	25	26	20	20	18	21	19	22	26	26	28	279
Number of foggy days, average	1	1	1	3	6	9	11	9	5	3	1	1	51

Mean temperature of different districts, chiefly from the same latitude.

Vestmanö, 15 years	1 ⁰⁰	1 ⁰³	1 ⁰²	3 ⁰⁹	6 ⁰⁴	8 ⁰⁷	10 ⁰⁶	9 ⁰⁹	7 ⁰⁸	5 ⁰¹	2 ⁰⁷	0 ⁰⁹	5 ⁰⁰
Berufford, 19 years	-1 ⁰⁶	-1 ⁰⁴	-2 ⁰²	1 ⁰⁰	3 ⁰⁶	6 ⁰⁷	8 ⁰³	7 ⁰⁹	6 ⁰⁴	3 ⁰³	0 ⁰⁸	-1 ⁰²	2 ⁰⁶
Thorshavn, 25 years	3 ⁰²	3 ⁰⁴	3 ⁰²	5 ⁰⁵	7 ⁰²	9 ⁰⁷	10 ⁰⁸	10 ⁰⁷	9 ⁰³	6 ⁰⁶	4 ⁰⁸	3 ⁰⁴	6 ⁰⁵
Klaksvig, 25 years	3 ⁰⁴	3 ⁰⁵	3 ⁰⁴	5 ⁰⁵	7 ⁰³	9 ⁰⁹	11 ⁰¹	10 ⁰⁸	9 ⁰⁵	6 ⁰⁸	4 ⁰⁹	3 ⁰⁷	6 ⁰⁷
Kvalbö, 25 years	3 ⁰⁹	4 ⁰¹	3 ⁰⁹	6 ⁰²	7 ⁰⁸	10 ⁰¹	11 ⁰¹	11 ⁰³	9 ⁰⁷	7 ⁰²	5 ⁰⁴	4 ⁰²	7 ⁰¹
Aalesund, 50 years	2 ⁰³	1 ⁰⁷	2 ⁰³	4 ⁰⁷	7 ⁰⁹	11 ⁰⁰	12 ⁰⁹	13 ⁰¹	11 ⁰⁰	7 ⁰⁴	4 ⁰³	2 ⁰⁶	6 ⁰⁸
Röros, 630m., 50 years	-10 ⁰⁶	-10 ⁰⁹	-7 ⁰⁶	-1 ⁰⁹	4 ⁰⁰	9 ⁰⁴	11 ⁰²	10 ⁰⁴	6 ⁰³	0 ⁰²	-6 ⁰¹	-10 ⁰²	-0 ⁰⁵

the sea that gives forth heat to the air. Altogether it is surprising how little difference there is between the winter and summer temperature of the Færøes — so little, that only a few places similarly situated from a geographical point of view can compete with them in this respect, viz. Shetland and the west coast of Ireland, but not even the south coast of Iceland or the west coast of Norway (see tab. p. 33).

On a closer study of the figures for each month, given in the table, it is impossible not to be struck by the length and coldness of the spring; thus, the month of March is as cold as January, or in other words, winter lasts through the whole of March. April also is rather cold and only in May does the temperature begin to rise in real earnest, continuing to do so until July-August, the two warmest months; but these two — the summer proper — are after all not so very hot, their temperature being $10^{\circ}8$ and $10^{\circ}7$. There is then a gradual fall through September, October and November till the winter temperature is reached in December. Thus we see that the autumn is rather long, and compared with the summer fairly warm, and this is even more the case with regard to the winter, as the mean temperature does not in any month fall to 3° or below it, and consequently there is no frost worth speaking of. Altogether there are only 69 days of frost annually (i. e. periods of 24 hours in which the temperature has for a time been below 0°), and of these, 47 occur in the four winter months, December-March. Moreover, the strength of the frost is not great, as is seen from the fact that the actual lowest temperature during 25 years has been $-11^{\circ}6$, and also from the fact that there are only 8 of the so-called »ice-days« annually (i. e. periods of 24 hours in which the temperature does not reach above 0°).

Inseparable from the cold summers and mild winters of an insular climate are the moistness of the atmosphere, the great masses of clouds, the heavy rainfall and the constant winds which are all characteristic of the Færøes.

Moistness of the Atmosphere and Rainfall. The table shows at a glance that the average moisture is as great as 82% annually, and that it is greatest in July-September (85%) and least in winter and spring (81% and 79%). With regard to the fogs, the records kept (which deal not with the fogs which shroud the mountain heights, but with those which arise in low-lying regions) show that they occur on 51 days in the year and are worst in

summer, especially in June—August. It is otherwise with the rainfall, which is highest in October-January (the average being 179 mm.) and lowest in April-July (about 88 mm). The number of wet days is also greatest in autumn and winter and least in spring and summer. During the year the rainfall amounts to as much as 1593 mm., distributed over 279 days — so that only 86 days in the year are free from rain.



Fig. 19. *Syðerö. Kvalbö.* A view of the west side of *Norbes Ejde*. The wind has torn up and carried away large parts of the solid slope. (After a photograph by Warming).

The amount of clouds is surprisingly great. The annual average amount (calculated according to a scale of 0—10, 0 denoting clear and 10 cloudy) is 7.4, i. e. on an average about $\frac{3}{4}$ of the sky is covered with clouds. The amount of clouds is least in early spring, but the average does not fall below 7. There are only 6 days annually of cloudless sunshine, while the cloudy days in which the sky is almost overcast, amount to 178 annually.

Wind. The Færøes may with justice be described as very windy; the winds are frequent and strong (Figs. 19 and 20). The average percentage for the year is as follows: —

N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	calm
14	12	8	10	10	17	13	5	11

Thus it will be seen that there are only 11% calm days in the year. In frequency, the south-west wind stands first, but the north wind is not far behind it. Yet these two winds differ the most widely from each other, the north wind being the coldest (with an average temperature of $3^{\circ}4$) and the driest, while the south-west wind is the warmest ($8^{\circ}3$) and one of the dampest; the



Fig. 20. Nolsö. The flat upper plateau of the island with Österö faintly visible in the background. As the surface is swept by the wind it consists mostly of bare gravelly patches carpeted here and there with grass. (After a photograph by Warming.)

difference in the temperature of these winds is greatest in winter varying from $6^{\circ}3$ — $7^{\circ}5$ in December-March.

All the figures given are from observations taken at Thorshavn, whence we have the best and longest observations. But as there is a difference in the different parts of the islands I give, by way of comparison, the mean temperature of two other places, Klaksvig on Bordö (Nordreöer) and Kvalbö on Syderö, from which it appears that Klaksvig is a little — but only a very little — warmer than Thorshavn, while there is a considerable difference between the temperature of the latter and that of Kvalbö. The difference averages $0^{\circ}6$, and, according to Willaume-Jantzen, is doubtless due to the fact that the warm southerly winds are, comparatively speak-

ing, more common at Kvalbö, for it can hardly be explained by the somewhat more southerly position of the latter.

Lastly, it must be borne in mind, that all these observations are made in places situated by the sea, but unfortunately, nothing is known for certain regarding the high lands, which will doubtless prove very different from the lowlands. So much is known that it is considerably colder there, and therefore the snow falls earlier and lies longer.

FLORA OF THE FÆRÖES.

PHANEROGAMAE AND PTERIDOPHYTA.

BY

C. H. OSTENFELD.

The vascular plants of the Færøes have often been made a subject of study, and as far as these plants are concerned, the islands may be said to be well-known, so that it will hardly be possible in the future to add anything considerable to the Flora.

The principal paper on the vascular plants is *Rostrup's* »Færøernes Flora«, published in 1870, which gives the results of a journey made in 1867 for the purpose of investigation by Mr. *E. Rostrup* and Mr. *C. A. Feilberg*. As the previous literature of the subject was fully dealt with in the above-named paper, I need only add that the earlier informations concerning this flora is to be found in *Horneman's* »Plantelære« (second edition), in *Landt's* »Forsøg til en Beskrivelse over Færøerne«, and in *Trevelyan's* and *Ch. Martins's* papers. Since the publication of *Rostrup's* paper only a few minor additions have been made — of which I have given an account in my earlier writings — viz. by *Melville*, *Kurtz* and *Simmons* and by me in my three preliminary lists. (See Historical Notes pp. 1—5).

In writing this work, I have had at my disposal a very rich material from the Museum of the Botanical Gardens of the University, Copenhagen. The latter contains the greater part of *Lyngbye's* collection, so that I have been able to correct the statements in *Horneman's* »Plantelære«; some species gathered by *Trevelyan*, and the whole of the considerable collection made by *Rostrup* and *Feilberg* is also to be found there. I have further had access to the most interesting portion of *Kurtz's* and *Simmons's* find; hence I have been able to revise almost all the earlier publications. But by far the greater part of the collections from the Færøes is of recent date, and were collected by Professor *Warming*, Mr. *Börge*, Mr. *Jensen* and Lieutenant *Lomholt*, but chiefly on my own

journeys in 1895—96—97, especially in 1897 when I in company with Mr. *Jac. Hartz* traversed the islands for six weeks for the purpose of studying the vegetation and making collections.

In the following treatment I have only numbered those species which I have actually seen and which must be regarded as belonging to the islands, or at least completely naturalized; a † placed before a species denotes that it has been accidentally introduced. On the other hand I have omitted all more or less doubtful statements of previous authors; as on looking through the older collections, I have arrived at the conclusion that the determinations are at least as often wrong as not, many of Landt's in particular being undoubtedly incorrect, a fact which may be explained by remembering that he was not a botanist and that he wrote his *Flora* after returning to Denmark; as it is, he has mentioned many common Danish plants as belonging to the Færøes, though this is evidently a mistake in the majority of cases. The distribution of the species on the different islands is naturally not fully known, but I have given as many details as possible, based mainly on Rostrup's and my own observations. Wherever possible, I have also given the vertical distribution and the time for flowering and fruiting.

The discoverer's name is given in brackets after that of the habitat. I have seen specimens from nearly all the habitats (especially Rostrup's).

List of abbreviations.

F. Börgesen.....	F. B.	Strömö	Str.
Chr. Jensen.....	C. J.	Syderö	Syd.
Lyngbye	L. or Lyngb.	Viderö	Vid.
C. H. Ostenfeld and Jac. Hartz	!	Österö.....	Öst.
Rostrup and Feilberg. R.; Rostr.		Flower	Fl.
Warming	W. or E.W.	Fruit	Fr.
Flora of the Færøes			
(by Rostrup)			
Fær. Fl.			

For the reader's convenience all orders, genera and species are arranged alphabetically under the main groups.

I. Dicotyledones.

A. Sympetales.

Order I. BORAGINACEAE.

† *Anchusa arvensis* (L.) Bieb.

Found by Rostrup in 1867 as a weed in potato fields on Sandö: Sands. In 1897 we also found it growing abundantly in the same locality.
Fr. end of August.

1. *Myosotis arvensis* (L.) Roth.; *M. scorpioides* Landt l.c.; *M. palustris* Martins l.c.

Found here and there on cultivated ground, e. g. Sandö: Sands (R., †); Str.: Kirbebö (R.); Syd.: Kvalvig (!); Kvalbö (!); not observed on the northern islands.

Fl. July. Fr. August.

2. *M. palustris* (L.) Roth., var. *strigulosa* Rehb.

Öst.: In a ditch by the lake at Ejde; fairly abundant over a limited area. (Kissmeyer, Simmons, †).

Flowering freely, but not fruiting (end of August).

3. *M. repens* Don.

This West-European species has hitherto been found only on Syd.: frequent by streams and in peat-bogs in the lowlands; found at many places between Trangisvaagfjord and Lobra, but not in the northern part of the island.

Fl. July. Fr. August—September.

4. *M. versicolor* Pers.

Common in cultivated fields.

Fl. June—July. Fr. August.

M. arenaria Schrad. I think this species ought to disappear from the lists of the flora of the Færöes. Kurtz's statement is undoubtedly wrong as I have said before (Ostenf. II. p. 12) and the specimen determined by me (Vestmanhav. leg. Kissmeyer) was a very imperfect one and may have been mistaken for *M. versicolor*. Unfortunately it is not in our museum, so I have been unable to revise my earlier determination.

5. *Mertensia maritima* (L.) Dc.

Found in several places on sandy shores on Str., e. g. Hvidenæs (R., F.B.); Kvalvig (R.); and Torsvig (Bergh, †).

Fl. June—July. Fr. August.

Order II. CAMPANULACEAE.

6. *Campanula rotundifolia* L.

Bordö: On Højefeld at 640 m., a small, thickly covered patch immediately beneath the highest plateau; Öst.: Nordskaale (Landt); Svinaa (!); and Kodlen at Ejde at some 250 m. (Simmons).

The specimens growing on Høje fjæld correspond fairly well to *f. arctica* Lange, Consp. Fl. Grœnl. p. 93, Fl. Dan. tab. 2711, which is only an Arctic form.

Fl. beginning of August.

Order III. COMPOSITAE.

7. *Achillea Millefolium* L.

Rather common in the lowlands. Often in densely hairy, woolly forms, and with reddish heads.

Fl. beginning of August.

8. *A. Ptarmica* L.

Syd.: Ditch-sides, Trangisvaag (R., !). Str.: Sydredal (Heiberg-Jürgensen).

Fl. beginning of August.

9. *Bellis perennis* L.

Common in low-lying regions in and outside enclosed fields, but not higher up the hills.

Fl. from May.

† *Cirsium arvense* (L.) Scop.

At several stations in inhabited places; Sandö: Sands (R.); Str.: Thorshavn (R.); Kirkebø (!); Syd.: Vaag (R.); Vaagö: Sandevaag (R., !). Is no doubt accidentally introduced everywhere, and keeps on reproducing itself, e. g. at Kirkebø, where Mr. Patursson told me it had only appeared a few years ago.

Fl. just out Aug. 27th 1897. Doubtless not fruiting at all.

10. *C. palustre* (L.) Scop.

Found here and there at foot of cliffs in low-lying regions, not observed in the Nordreöer.

Fl. July—August.

Carduus crispus, *C. acanthoides* and *Cirsium lanceolatum*, mentioned by older authors, should doubtless all of them be placed under the above-mentioned species.

11. *Gnaphalium supinum* L.

Found only on the highest plateaux of the Nordreöer; Kalsö: Blankeskaalefjæld, from about 600 m. (!); Kunö: in the southern part, at some 700 m. (!); Vid.: Villingedalsfjæld at some 700 m. (R., !); Mornefjæld, at some 700 m. (!).

Fr. beginning of August.

Hieracium spp.

The different species of this genus from the Færøes (none of which belong to the group *Piloselloidea*) will be treated by Mr. H. Dahlstedt, Stockholm, and are therefore omitted from this list.

12. *Leontodon autumnale* L.

Common in low-lying regions, in and beyond enclosed fields, in damp places (saltmarshes) or somewhat higher up in the hills, where it mostly occurs as var. *Taraxaci* (L.).

Fl. July. Fr. August.

13. *Matricaria inodora* L. var. *phaeocephala* Rupr. (var. *borealis* Rostr. Fær. Fl. p. 53).

Occurs rather frequently, partly on sandy sea-shores and on rock-ledges by the sea-shore and partly in sandy cultivated fields not far from the coast. The main species is not met with on the Færøes.

Fl. July—August. Fr. August—September.

14. *Senecio vulgaris* L.

Found here and there in enclosed fields especially near houses.

† *Sonchus arvensis* L.

Accidentally introduced on Syd.: Trangisvaag 1895 (Simmons).

15. *Tanacetum vulgare* L.

Rather common in inhabited places, especially in churchyards; doubtless originally imported.

Fl. August—September. Probably no fruit.

16. *Taraxacum croceum* Dahlst. apud G. Andersson och H. Hesselmann: Bidrag til kännedomen om Spetsbergens och Beeren Eilands kärlväxtflora. Bihang till k. svenska Vet.-Akad. Handlingar, Bd. 26, Afd. III, Nr. 1, Stockholm 1900, p. 12.

T. palustre Rostr. l. c. p. 51, non DC.; *T. laevigatum* Ostenf. III, non (Willd.) DC.

Common outside enclosed fields, on ledges and in clefts of rocks especially some way up in the hills.

Mr. H. Dahlstedt, the well-known authority on *Hieracium* has just described this new species, which seems to be widely distributed in the northern regions, as it is found in the Scandinavian mountains, in Spitsbergen, in Iceland and in Greenland. It has been taken for *T. palustre* (*T. paludosum*) as well as for *T. laevigatum* which are hardly found in the Arctic regions; from them as well as from *T. vulgare* it seems fairly distinct, but this question needs further investigation.

Fl. June—July. Fr. July—August.

17. *T. vulgare* Schrk.; *T. officinale* Web.

Apparently common in inhabited places and in enclosed fields; we found it in several places.

To this and not to *T. erythrospermum* Andrzej. I refer a peculiar form from Sandö: Sands, f. *bipinnatifida* (Rostr.) found and mentioned by Rostrup (l. c. p. 51); it has large laciniate-bipinnatifid leaves with many and small teeth, besides a well developed horn on the inner involucre scales.

18. *Tussilago Farfara* L.

Found here and there in sandy enclosed fields, and in gravel by larger streams. We only found a few specimens.

Fl. May—June.

Order CONVOLVULACEAE.

† *Convolvulus sepium* L.

Found as a weed in gardens at Thorshavn. (R., E. W.)

Does not flower.

Order IV. DIPSACACEAE.

19. *Succisa pratensis* Moench.

Common in and outside enclosed fields in damp peaty ground; sometimes bears white flowers; does not grow up in the hills.

Fl. end of July. Fr. September.

† *Trichera arvensis* (L.) Schrad.

Weed in clover-fields near Thorshavn 1895 (Simmons).

Fl. beginning of September.

Order V. ERICACEAE.

20. *Calluna vulgaris* Salisb.

Common in heaths and moors outside enclosed fields; however, seldom occurring as a dominant social species. Grows in low-lying regions and sometimes on hill-slopes, but not on the higher mountains.

Fl. beginning of August.

21. *Erica cinerea* L.

Generally mixed together with the above-mentioned and in the same localities, consequently not high up in the hills; seems to prefer sunny spots facing south and west. We found it — in varying frequency — on all the islands except Fuglō.

Fl. end of July and beginning of August.

Erica Tetralix is said by Melvill to have been found at Trangisvaag by Mr. Backhouse, but as none of the many other botanists who have visited Trangisvaag has found it, I believe this statement is due to a misunderstanding.

22. *Loiseleuria procumbens* (L.) Desv.

Rather frequent in *Grimmia*-heath on the higher hills on the northern islands; most frequent in the Nordreöer; not observed on Sandö and Syd. It occurs from about 400 m. upwards.

Fl. May. Fr. August.

Order VI. GENTIANACEAE.

23. *Gentiana campestris* L.* *islandica* Murb.; Sv. Murbeck: Studien über die Gentianen aus der Gruppe Endotricha Froel.; Acta Horti Bergiani, Bd. 2, N. 3, 1892; and: Ueber eine neue Alectorolophus-

Art und das Vorkommen saison-trimorpher Arten-Gruppen innerhalb der Gattung; Oesterr. botan. Zeitschrift, Jahrg. 1898, N. 2—3, Sep. pp. 7—9.

Rather common on grassy hill-slopes in low-lying regions, sometimes also higher up in the hills, e. g. Bordö: Holgafjæld 460 m. (!); Vid.: rock-terraces on Mornefjæld, 450 m. (!); Villingedalsfjæld (!).

Fl. end of July—August.

In Murbeck's »Studien« p. 10 var. *islandica* is mentioned as occurring on Vaagö, and Simmons (1896, l. c. p. 73) reports that all he met with belonged to this form. For the purpose of verifying this we collected a large material from all the different localities, wherever it was to be found. Further investigations show that while some of the localities — especially the higher ones — have typical **islandica*, other forms, approaching very near to **germanica* Murb. are as frequently met with; from some localities (e. g. Sandö: Sands, and Vaagö: Sandevaag) they are almost like typical North-European **germanica*. According to Murbeck (Studien p. 12) this latter form also occurs in Shetland, I am therefore of opinion that we here meet with the first attempt towards differentiating these forms. As Murbeck (Alectorolophus, pp. 7—9) has fully shown **islandica* is the original form in localities where the period of growth is too short to allow of the development of both spring and autumn forms. In the Færöes the autumn form has begun to develop in the lower localities, whilst the original form is still typical in the hills. Thus we see that the development of the autumn form corresponds to the long and warm autumn (see p. 34).

I have chosen to mention it as **islandica*, because that is the form which is most frequently met with, and also because the transition to **germanica* is not quite accomplished.

24. *Menyanthes trifoliata* L.

Found in small lakes, but rather rare. Usually not flowering and very seldom fruiting.

Landt l. c. p. 184 mentions that he never saw it in flower, while Rostrup l. c. p. 50 found it flowering everywhere, which taken in connection with our own observations shows that it does not flower regularly every year. We observed it on Sandö, Syd. and Öst.

Fl. end of July. Fr. end of August.

Order VII. LABIATAE.

25. *Brunella vulgaris* L.

Rather common in low-lying regions, in grassy, fairly dry localities.

Fl. July.

26. **Galeopsis Tetrahit** L.

Common weed in enclosed fields especially in cultivated parts. It varies somewhat in form, but is usually remarkably stiff-haired.

Fl. July.

† **Lamium dissectum** With.; *L. incisum* Willd.; *L. hybridum* Vill.

Accidentally introduced as weed in fields; Sandö: Sands (E. W.); and Syd.: Kvalbø (R., !).

† **L. intermedium** Fr.

As above; Sandö: Sands (R., !); Syd.: Kvalbø (R., !); Vaagö: Sörvaag (R.).

† **L. purpureum** L.

As above; Sandö: Sands (E. W.); Syd.: Kvalbø (R.), etc. Rostrup mentions it as common.

These three species flower in July and have ripe fruit by end of August.

27. **Menta aquatica** L.

Str.: Kirkebø (R.) [Kvalvig, according to Landt]; Vaagö: between Bø and Gaasedal (R.); Sörvaag (Lyngb.).

Fl.?

28. **Thymus Serpyllum** L.

Common on hill-slopes and in the hills on fairly dry ground. *F. proslata* Horn. (= *f. borealis* Lge, apud Rostr. l. c. p. 49) occurs on the hills, but passes gradually into the main form, which latter, however does not often (Sandö: Saltvigsvatn; Syd.: Vaag) seem to be typical.

Fl. June—July. Fr. end of August.

Order VIII. LENTIBULARIACEAE.

29. **Pinguicula vulgaris** L.

Common in low-lying regions and up in the hills on damp peaty ground.

Fl. June—July.

Order IX. LOBELIACEAE.

30. **Lobelia Dortmanna** L.

This fine plant, which had not previously been observed in the Færøes was found by Professor Warming in a small lake on Sandö, and later on we found it in several other small lakes on the same island. Sandö: Benediktstjern (E. W.), Nigitjern, Saltvigsvatn (!), Holsavatn (!).

Fl. beginning of August. Fr. August—September.

Order X. PLANTAGINACEAE.

31. **Littorella lacustris** L.

Common in all the lakes, mostly mixed together with *Isoëtes*. Grows

very rarely over the surface of the water, and then flowers, but we noticed it thus only in one place; Syd.: Kvalbø Eide (July 17th).

32. *Plantago Coronopus* L.

Found only on Syd.: between Sunnbø and Agraberg (C. J.), Vaags Ejde (R., †), Kvalbø Ejde (†). Grows in grassy, fairly dry localities, not far from the sea.

Fl. beginning of July.

33. *P. lanceolata* L.

Common in the lower localities, but does not extend up the hills. It is to be found under many forms, amongst others, f. *eriphylla* (Dene.)

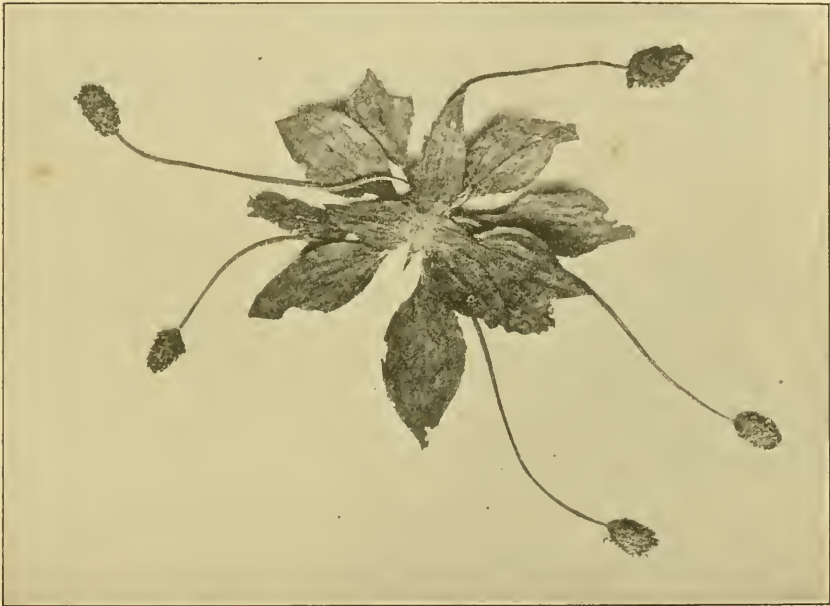


Fig. 21. *Plantago lanceolata* L., var. *depressa* Rostr. Specimen from Syderø (Kvalbø, July 21st 1897).
($\frac{1}{2}$ natural size).

which occurs here and there. Characteristic is the var. *depressa* Rostr. l. c. p. 54, its broadly ovate leaves (20—26 mm. broad, 75—80 mm. long) lying flat on the ground (Fig. 21). Grows on sandy soil near the sea-shore; Syd.: Kvalbø, and Sandø: Sands (R., †).

Fl. June. Fr. August.

† *P. major* L.

Accidentally introduced as a weed near houses. Str.: Kirkebø (R., †); Vaagø: Sørvaag (Landt).

34. *P. maritima* L.

Common both on the sea-shore, in close grass, in rocky clefts and on ledges, and in the hills. It varies immensely in size, form and

hairiness; on fertile rock-ledges large healthy forms are found with long cylindrical spikes, and long leaves flat or concave; on unfavourable soil — bare gravelly plains on the hills or unfertile clefts as also in close grass — forms are found with globose, few-flowered spikes and cylindrical or semi-cylindrical leaves, only a few centimetres in length; these may probably be classed under f. *pygmaea* Lge. apud Rostr. l. c. p. 55.

P. borealis Lge., which however is only a form of *P. maritima*, does not occur on the Færøes (Kurtz and Ostenf. II).

Fl. June—July. Fr. August—September.

Order XI. PLUMBAGINACEAE.

35. *Armeria elongata* (Hoffm.) Koch.

Common both in the lowlands and in the hills, in clefts of rocks, on ledges and on bare stony ground. Var. *maritima* (Mill.) Willd. is most frequently met with, but in the hills specimens are also found that must be reckoned as var. *sibirica* (Turez).

Fl. June—July.

Order XII. PRIMULACEAE.

36. *Anagallis tenella* L.

As early as 1794 a drawing of this plant was made for Fl. Dan., tab. 1086, after specimens from the Færøes, and in 1821 Trevelyan re-discovered it at the stated habitat, Vaagð, near Bosdalafos. It has since been vainly sought there by others, but we found it in great quantities and in full flower over a smaller area. We also found it on Öst. near Toftevatn; in both places it grew in close grass on flat land near the shore of the lake. Probably its late flowering has been the reason why so many have failed to find it.

Fl. August 19th (Öst.); August 26th (Vaagð, bearing young fruit).

37. *Lysimachia nemorum* L.

This plant is a rather unexpected addition to the flora. We found it on Str. near Leinumvatn on a sandy grass-covered patch near the lake.

Fl. end of July (very sparingly).

38. *Primula acaulis* (L.) Jacq.; *P. grandiflora* Lam.

Known from olden times on Sandö, where it grows on rock-ledges near Tröðum. Tradition says that it is imported, but as it is common in the Shetland and Orkney Isles, it is most likely a native. The fact that the inhabitants of the island remove it from its habitats into their gardens may account for the tradition that it is imported.

Fl. June.

Order XIII. PYROLACEAE.

39. *Pyrola minor* L.

Found at some stations in *Grimmia*-heath, at high levels, but absent in low-lying lands, where it might be expected to grow in clefts and

on hill-slopes. Bordö: Klakken 400 m. (!), Holgafjæld, 335—475 m. (!); Fuglō: plateau in the hills, 575 m. (!); Str.: Stigafjæld 400 m. (C. J.).

Sterile everywhere except on Holgafjæld, the shoots grow in a close *Grimmia*-carpet, only the small leaves reaching above the moss and spreading themselves on it. On Holgafjæld we found both this sterile form in moss from 335—380 m., and a large robust form (finished flowering August 14th) which grew on a luxuriant rocky ledge manured by birds, at about 475 m., facing south-west.

Order XIV. RUBIACEAE.

† *Galium Aparine* L.

Accidentally introduced. Syd.: shore at Porkere (R.).

Fl. beginning of August.

40. *G. palustre* L.

Only found on Öst.: by the lake near Ejde (!).

Fl. middle of August (sparingly).

41. *G. saxatile* L.

Common in low-lying regions on grassy slopes.

Fl. June—July.

Landt mentions both *G. boreale* and *G. uliginosum* but to judge from his exhaustive descriptions, he no doubt refers to the above-mentioned species.

Order XV. SCROPHULARIACEAE.

42. *Alectorolophus minor* (Ehrh.) Wimm. & Grab.

Common in enclosed fields where it is often found in considerable quantities and together with *Euphrasia borealis*; occurs rarely on waste ground outside the enclosures.

Fl. July. Fr. August—September.

43. *A. groenlandicus* (Chab.) Ostenf. emend.

Found here and there on the islands on luxuriant terraces of basalt rock, always clearly distinguished from the above species both with regard to its habit and habitat. — Fuglō: on the southern slope of the hill, 200 m.; Nolsö: talus of débris gathering on the eastern side; Str.: ravine near Gjanöre; Syd.: ravine near Trangisvaag; Vid.: ravine near Vedvig; talus of débris gathering at Enneberg; Öst.: rocky ledges at Östnæs (Næs-Reuk); ravine near Selletræ.

Fl. July (appears to flower somewhat later than the above). Fr. August—September.

Of late years, several authors have described a great many species of the genus *Alectorolophus* (*Rhinanthus*), some of which belong to the group *Minores* Sterneck, mostly consisting of species with a northerly distribution; though these new species do not differ much from *A. minor*, yet they appear to have certain per-

manent features which make them distinguishable; and their claim to be a separate species is further proved by their geographical distribution.

By means of the large Arctic collection belonging to the Botanical Gardens in Copenhagen, I have been able to study the Arctic forms of this species which have been described as *A. borealis* Sterneck¹ and *Rhinanthus groenlandicus* Chabert². Unfortunately the descriptions are based on a limited number only of specimens, so that the authors were unable to ascertain the relative importance of the characteristics pointed out by them. Thus, Sterneck gives as the chief characteristic of his *A. borealis* its hairy calyx, a characteristic which it shares only with *A. asperulus* Murb. from the Bosnian mountains. Further investigations show that among a large number of Arctic specimens there are always some with a hairy calyx, but the greater part with glabrous, though the specimens do not otherwise differ from each other in any respect. As Sterneck only had a few young specimens for examination (»Das eine . . . vollständige Individuum gestattet . . . eine Beschreibung und Benennung . . .«), his description is also incomplete with regard to fruiting and seeding.

Chabert's description of *Rhinanthus groenlandicus* is based on some Greenland specimens, which were very large and robust, as is often the case with those from Greenland; his description is otherwise fairly correct, though he goes to the other extreme from Sterneck in emphasizing the glabrosity of his species.

According to the specimens — upwards of a hundred in number — mostly from Greenland and Iceland, which I have had for examination, I think that *A. borealis* and *Rhinanthus groenlandicus* ought to be regarded as extreme forms of an Arctic species, which differs from *A. minor* by its broader leaves with spreading teeth, and the bright yellow colour of the upper part of the plant. The latter feature has induced older botanists (e. g. J. Vahl) to regard the large Greenland specimens as *A. major*, from which it is quite distinct.

With regard to the naming of this Arctic species, I prefer Chabert's

¹ Jacob v. Sterneck: Revision des Alectorolophus-Materiales des Herbarium Delessert. Annaire du Conservatoire et du Jardin botaniques de Genève, 3 année, 1899.

² Alfred Chabert: Étude sur le Genre *Rhinanthus* L. Bulletin de l'Herbier Boissier, 7 année, 1899.

name for the following reasons: his description suits the majority of the Arctic specimens, while Sterneck's only applies to a few



Fig. 22. *Alectorolophus groenlandicus* (Chab.) Ostenf. 1, from Greenland (Frederikshaab, Aug. 15th 1886); 2, from Iceland (Olafsdalur, Aug. 25th 1897); 3, from the Færøes (a, Fuglø, Aug. 7th 1897; b, Østero, Selletæ, Aug. 21st 1897); 4, var. *Drummond-Hayi* (B. White) Ostenf., from Iceland (Eyjafjord, July 30th (a) and (b) 31st 1897). ($1/2$ natural size).

varying specimens; further I am pretty sure that Sterneck's *A. borealis* is identical with var. *Drummond-Hayi*, which F. Buchanan

White¹ has reported from the Scottish Highlands: »Calyx pubescent with short hairs. Stem more or less shaggy (especially at the lower part) with articulated hairs. Plant dwarf, 2—5 inches high, in our specimens not branched.« Through the kindness of Dr. Murbeck I have had an opportunity of becoming acquainted with the original specimens of this small form which is mentioned as a variety of *Rhinanthus crista galli* (= *A. minor*) and I am of opinion that they are identical with small Icelandic specimens, which again coincide with the description of *A. borealis*; the latter is beyond doubt a low, more densely hairy variety of the main species *A. groenlandicus*, both of which, however, have sometimes the hairy calyx, but while this is rarely the case with regard to the main species, it often occurs in the variety. The latter ought to be called by the old name given by White.

I give below a short description of *A. groenlandicus* and its var. *Drummond-Hayi* together with a list of the localities whence I have seen specimens (all of which, except where otherwise stated, are to be found in the collection of the Botanical Gardens in Copenhagen).

Alectorolophus groenlandicus (Chab.) Ostenf. emend.; Fig. 22, 1—3; Syn. *Rhinanthus groenlandicus* Chabert, Bull. Herb. Boissier 1899, p. 515.

Stem 15—45 cm. high, more or less shaggy at the angles, simple, or with a few short ascending branches. The length of the internodes varying from half as long as the leaves to twice as long.

Leaves large, somewhat fleshy, coarsely serrate with spreading teeth, broadly lanceolate or ovate-lanceolate (*A. minor* has narrowly lanceolate leaves, serrate with adpressed teeth.).

Bracts glabrous, seldom hairy, large, the lowest at least twice as long as the calyx, with bristle-pointed gradually diminishing teeth.

Calyx large, 13—25 mm. long (*A. minor*, about 10—12 mm.), glabrous on the surface, rarely with unicellular short hairs, edges pubescent.

Corolla like that of *A. minor*, but bright yellow excepting the two minute teeth below the apex of the upper lip.

Capsule large, 10—18 mm. long (*A. minor*, about 7 mm.); seeds winged.

The whole plant especially the upper part is of a bright yellow-green colour without the violet-brownish tinge which is characteristic of *A. minor*.

Fl. July—August, Fr. August—September.

¹ F. Buchanan White, »Notes of the Herbarium of the Perthshire Natural History Museum«; The Scottish Naturalist, 1885—86, p. 324.

Geographical distribution: Labrador (?); West-Greenland: 60°—65° N. Lat., common; Iceland: Brjamslækur, Reykjavík, Olafsdalur, Máfahlíð, Ingjaldshóll, Hornafjarðareyjar, Husavík, Slutnes; The Færöes: see above; Arctic Norway: Hammerfest, Alten, Sörö; Lapmark: Quickjok, Kengis.

— — var. **Drummond-Hayi** (B. White) Ostenf.; Fig. 22, 4; Syn. *Rhinanthus crista galli* L., var. *Drummond-Hayi* Buchanan White, Scottish Naturalist, 1885—86, p. 324; *A. borealis* Sterneck, Ann. Conservat. et Jardin bot. de Genève. 1899, p. 25.

Stem simple, 5—10 cm. high; leaves narrower, bracts smaller and both generally with short unicellular hairs on the upper side; Calyx and capsule smaller, the former often with short unicellular hairs on the surface.

Geographical distribution: Unalasehka (according to Sterneck); West Greenland: Nennese, Kornak; Iceland: Hoffjardará, Silfvarstaðir, Reykjavík, Reykjahlíð, Vallanes; Scotland: Ben Lovers, alt. 3350 feet (Buchanan White).

The genus **Euphrasia** has been the subject of our special attention during our excursion and I have therefore had a very rich material at my disposal; besides these newly gathered specimens there are some smaller and badly preserved ones in the collection of the Botanical Gardens determined by Prof. Wettstein.

In working up this subject I have made use of Wettstein: Monographie der Gattung Euphrasia, 1896, and F. Townsend: Monograph of the British Species of Euphrasia, Journ. of Botany 1897; but it must be admitted that several of the species have appeared to me to be hardly distinct and it was even necessary to draw an arbitrary and unnatural line to distinguish them from each other. Thus *E. latifolia* merges on the one hand into *E. atropurpurea* (= *E. foulaënsis*) and on the other into *E. curta*; and *E. scotica* is difficult to distinguish from *E. gracilis*, whilst it also tends towards *E. atropurpurea*. In the meantime I have done my best to distinguish them from each other and the following is a list of them:

44. **E. atropurpurea** (Rostr.) Ostenf. mscr.; Syn. *E. gracilis*, f. *atropurpurea* Rostr. Fær. Fl., 1870, p. 48 (vidi specimina originalia); Syn. *E. foulaënsis* Towns., Wettst. l. c. pp. 139 and 299, Towns. l. c. p. 422.

Found here and there on all the islands, but not in the lowlands, generally grows in the hills on grassy rock-ledges, from 300 m. upwards.

45. *E. borealis* (Townsend) Wettst. pp. 108 and 298; Townsend. p. 400.

This is the only Færøese species with larger corollas; common and characteristic in swampy pasture-lands and found only in the lowlands.

At Sands on Sandø we found in great quantities a large-sized *Euphrasia*, which was only to be distinguished from *E. borealis* by its small corollas (5—7 mm.), which I put down as var *parviflora* n. var.

46. *E. curta* Fr.; Wettst. p. 128; Townsend. p. 417.

Found here and there beyond enclosed fields in the lowlands and in the lower hills (until 200 m.). Not met with on the Nordreøer.

47. *E. gracilis* Fr.; Wettst. p. 143; Townsend. p. 423.

The specimens which I refer to this species were gathered on fairly dry ground in the lowlands in the following places; Sandø: Sands; Syd.: Vaag; Vid.: Viderejde; Øst.: Selletræ.

48. *E. latifolia* Pursh.; Wettst. pp. 136 and 298; Townsend. p. 420; Syn. *E. arctica* Lge. apud Rostr. Fær. Fl. 1870. p. 47.

Found here and there on the islands on rock-ledges both lower down and up in the hills. e. g. Kalsø: Mygledal; Vid.: Enneberg (E. W.).

49. *E. scotica* Wettst. p. 170; Townsend. p. 425; *E. gracilis* Rostr. l. c. p. 48, non Fr.

Common and characteristic in the low-lying part of the fields beyond enclosures on damp peaty soil.

All these species of the *Euphrasia* flower from the end of June and have ripe fruit in August.

50. *Pedicularis palustris* L.

Found here and there in bogs in low-lying regions on most of the islands, but not on the Nordreøer.

Fl. July. Fr. end of August.

51. *Veronica alpina* L.

Found on grassy patches at high levels. Bordø: Højefjæld, 620 m. (!); Kunø: at the southern end, at about 700 m. (!); Vid.: Villingedalsfjæld, 700 m. (!); Malingsfjæld, 5—600 m. (!).

The older reports of this species being met with on the islands must be mistaken, it having no doubt been confounded with the hill form of *V. officinalis*, as can be proved by Lyngbye's specimens, which I have seen.

Fr. August.

52. *V. Beccabunga* L.

According to Rostrup, found here and there in low-lying districts; we only saw it on Str. at Thorshavn; besides these specimens there are specimens in the collections only from Øst.: Næs (Lyngb.).

Fl. beginning of July.

- † *V. hederæfolia* L.

Accidental weed at Thorshavn (R.).

53. *V. officinalis* L.

Rather common in low-lying regions on hill-slopes and on rock-
ledges; also occurs at high levels and there mostly as f. *glabrata* Fri-
stedt (Västgeogr. skildr. af Södra Ångermanland, Upsala 1857), e. g.
Bordö: Holgafjæld, 450 m. Vid.: Malingsfjæld, 500 m.

Fl. beginning of July. Fr. August, but bears fruit sparingly;
often fails altogether in the hills.

54. *V. serpyllifolia* L.

Common both in and beyond enclosed fields and in the hills; in
the latter as var. *borealis* Læst. (Nova Acta soc. scient. Upsala, 11,
1839), e. g. Vid.: Malingsfjæld, 600 m. Öst.: Fuglefjordsfjæld, 600 m.

Fl. beginning of July. Fr. August.

Limosella aquatica was reported by Lyngbye (Collin: For Historie og Stati-
stik I. p. 124, Kjöbenhavn) as having been found by him at the foot of Skjelling-
fjæld, but Lyngbye's specimens from the above locality and bearing this name
are *Litorella lacustris*.

Landt further mentions *Bartschia alpina* from North-Strömö, but this state-
ment requires verification.

Order XVI. VACCINIACEAE.

55. *Vaccinium Myrtillus* L.

Rather common on all the islands, on hill-slopes, rock-ledges and
amongst moss on the highest plateaux of the lower hills where it occurs
mostly in the small-leaved, sterile forms of f. *pygmaea* Ostenf. (I. p. 150),
see Fig. 23, a.

Fl. June. Fr. August, but hardly seems to bear fruit; we only
found a few berries at one place on Syd. and at another on Vid.

56. *V. uliginosum* L.

Found as above, but lower down and much more rarely; Nolsö
(R.); occurs here and there on Str., Sandö and Vaagö (R., !); further
at Ejde on Öst. (R.). Besides the main form we found in *Grimmia*-
carpet on some hill-tops (400—700 m.) f. *microphylla* Lge. Consp. Fl.
Groenl. p. 268, viz. Bordö: Højefjæld and Gjerdum Rejn; Vid.: Morne-
fjæld.

Flowering and fruiting as above, but we only observed fruit
(ripe August 29th) on Sandö: Saltvigsvatn.

57. *V. Vitis idaea* L.

Found in fairly dry localities on hill-slopes in the lowlands, but
only at a few places, e. g. Nolsö (R.); Sandö: between Skopen and
Sand (!); Str.: Lejnumvatn (!); Vestmanhavn (Kissmeyer); Syd.: Tværaa
(!); Vaagö: Midvaag (R.).

We nowhere observed it in flower, but the specimens from Vest-
manhavn (June 29th 1893) have full-blown flowers. On the other hand
it may be taken for granted that it does not bear fruit.



Fig. 23. *Vaccinium Myrtillus* L., f. *pygmaea* Ostent. Specimens from Sydö (a.); a leaf of the typical form from Strömo is figured for comparison (b). (Natural size).

B. Choripetalae.

Order XVII. CALLITRICHACEAE.

58. *Callitriche hamulata* Kütz.

Common on the islands in ditches and pools of water in the lower districts; grows to a height of about 200 m. Landforms with linear leaves are most frequent, but here and there aquatic forms with floating leaves, spatulate, in a rosette are also found.

In my list (Ostenf. III. p. 140) I mention *C. pedunculata* from Miavevatn on Strömö, but on further investigation I think that the specimens collected must be placed under *C. hamulata*, though all the fruits have stalks, some even long stalks, as the sharply marked keel peculiar to *C. pedunculata* D. C. is wanting. Doubtless on the Færöes *C. pedunculata* has not become differentiated from *C. hamulata*, as Hegelmaier (Zur Systematik von Callitriche; Verhandl. d. bot. Vereins f. Brandenburg, IX, p. 33) points out as being the case in the British Isles. This accounts for the frequent occurrence of the landform, though *C. hamulata* is rarely a land plant, in contra-distinction to *C. pedunculata* which is frequently found on damp ground.

59. *C. stagnalis* Scop.; *C. verna* Landt, non L.

Commonly grows together with the preceding, but is still more frequent, as it occurs by every water-pool and small stream in low-lying regions. Rostrup mentions (l. c. p. 58) a var. *pedunculata* as possibly identical with *C. pedunculata* D. C., but it is only a small landform which is typical *C. stagnalis*, only some of the fruits are short stalked (specimens in the collection of the Museum of the Botanical Gardens).

No part of our rather large material consisted of *C. verna* L. (*C. vernalis* Koch) and I think Landt's statement is a confusion with the above-named species. Also Simmons's statement (l. c. p. 73) is based on a wrong determination; this I have been able to prove as he has kindly placed his specimens at my disposal, and they turned out to be the aquatic form of *C. hamulata*.

60. *C. autumnalis* L.

Occurs only on Syd., in the lake at Vaags Ejde (R., !).

All the species have ripe fruit in August.

Order XVIII. CARYOPHYLLACEAE.

† *Agrostemma Githago* L.

Str.: Skjelling »in agris« (Lyngbye 1817). No doubt accidentally introduced in corn-fields in one single year; not seen afterwards.

61. *Alsine verna* Bartl. var. *hirta* (Wormsk.) Lge.

Syd.: Örnefjæld at some 400 m. (!).

This small unpretending plant no doubt occurs in several places on the hills, but we only met with a solitary specimen.

62. *Cerastium alpinum* L.

Fuglõ: on rock-ledges at about 600 m. (!). All the numerous plants met with were ♂; in the beginning of August, (Aug. 7th) they were in full flower.

63. *C. Edmondstonii* (Wats.) Murb. & Ostenf. in Murbeck: Studier öfver kritiska kärlväxtformer III. De nordeuropeiska formerna of släktet *Cerastium*. Botaniska Notiser 1898, p. 246. — *C. latifolium*, β *Edmondstonii* Watson, London Botan. Soc. Catalogue of British Plants 1844. — *C. nigrescens* and β, *acutifolium* Edmondston, Flora of Shetland p. 29, 1845. — *C. latifolium* Auctt. non. Linné; Rostr. Fær. Fl. p. 36. *C. arcticum* Lange, Fl. Dan. facs. 50, p. 7, 1880 pro parte (for the remaining synonyms see Murbeck l. c.).

Common on all the islands on the plateaux in bare gravelly stony ground, but not in the lowlands.

Fl. June. Fr. July—September.



Fig. 24. *Cerastium Edmondstonii* (Wats.) Murb. & Ostenf. Specimen from Svinó (Aug. 7th, 1897). (1/2 natural size).

This species (Fig. 24), which is pretty distinct from the Alpine *C. latifolium* L., but verges towards another Alpine species *C. uniflorum* Murith (*C. glaciale* Gaud.) has been very differently reported. The honour of having made it fairly well-known falls to Johan Lange, whose name, however, cannot be used on account of a claim to priority fully pointed out by Murbeck in his above-mentioned treatise (p. 247), and I had also arrived at the same conclusion independently of Murbeck's investigation, at that time not yet published. In the meantime on examining Lange's original specimens to *C. arcticum* I also observed that he himself was not thoroughly acquainted with it, thus, he has referred several Iceland and Greenland specimens of *C. alpinum* to *C. arcticum*, when they had a

dense growth and short internodes (being young the scarious-margined bracts which are a characteristic of *C. alpinum* had not yet come out). Together with a few other phanerogams (*Euphrasiae* and *Alchimilla faeroënsis*) they form a small group of species, which is generally dispersed in all the Færøes; but otherwise they have a rather limited distribution. The Færøes seem to form the centre of their developement.

64. *C. glomeratum* Thuill.; *C. viscosum* Auctt. non Linné; Rostr. Fær. Fl. p. 35.

Rather rare in enclosed fields, found at the following places. — Str.: Kirkebø (R., !); Højvig (R.); Syd.: Kvalbø (R., !), Trangisvaag (!), Frodebø (!), Vaag (!); Vaagö: Midvaag (R.).

Fr. July—August.

65. *C. trigynum* Vill.

Str. Sneisen (L.); Vid.: Villingedalsfjæld (R.).

We did not meet with it in our excursions, but specimens from the two above-mentioned localities are to be found in the collection of the Museum of the Botanical Gardens.

The locality — Nolsø — mentioned by Rostrup (p. 36) must be omitted, as Rostrup's specimens are a very large-flowered *C. vulgare*, var. *alpestre*.

66. *C. tetrandrum* Curt.

Found here and there on sea-cliffs along the coasts and similar places. Nolsø: Talus of débris forming on the eastern side (!) and by the village (R., !); Str.: Kirkebø (L.); Syd.: Frodebø (R.), Kvalbø (R., !); Vaagö: at Bosdalafof (!); Vid.: Enneberg (W.); Öst.: Ejde. Mölen (L., !), Andefjord (R.).

In some of the above-mentioned localities var. *Zetlandica* Murb. Cerast. p. 254 was found partly alone and partly together with the main species (Nolsø, Kirkebø, Bosdalafof and Andefjord).

Fr. July.

67. *C. vulgare* Hartm.; *C. vulgatum* Auctt., non Linné; Rostr. l. c. p. 34.

Very common outside enclosed fields and on the hills as subspecies *alpestre* (Lindbl.), often in gigantic forms (f. *major* Rostr. Fær. Fl. p. 34) on cliffs inhabited by sea-fowl; on the other hand the subspecies *triviale* Link is probably rather rare, but still it occurs here and there in enclosed fields.

Fl. June. Fr. July—August.

68. *Honckenya peploides* (L.) Ehrh.; *Halianthus* Fr., Rostr. l. c. p. 36.

Rather common on sandy sea-shores.

— var. *major* Rostr. l. c. p. 36. Leaves, elliptic-lanceolate, 10—



Fig. 25. *Honckenya peptoides* (L.) Ehrh., var. *major* Rostr. 1, Specimen from Strömö (Höjvig, July 30th 1897
2, typical specimen from Sandö (June 12th 1895). ($1\frac{1}{2}$ natural size).

20 mm. broad and 25—50 mm. long; internodes 5—6 cm. long; the whole plant gigantic 50—70 cm. high. Flowers with rudimentary pistil. (Fig. 25,₁)

This curious gigantic form, which was first described by Rostrup, occurs in a few places, but it appears to be a monstrous form, doubtless developed by growing on soil very richly manured (quantities of washed up and rotting algæ).

Str.: Højvig (!); Skuö (R.); Syd.: Kvalbø (R., !); Trangisvaag (!); Vid.: Kvannesund (Lomholt).

Fl. June—July. Fr. (main form) August.

69. *Lychnis flos cuculi* L.

Common in low-lying regions in boggy soil; sometimes bearing white flowers (e. g. Syd.: Kvalbø). On Syd. (in Vaags Ejde) in very windy localities a small dwarf form (f. *pygmaea* nov. f.) was found with a one- (rarely two-) flowered stalk, 2—4 cm. high.

70. *Melandrium rubrum* (Weig.) Garcke; *M. diurnum* (Sibth.) Fr.

Rostrup (p. 34) mentions that it occurs here and there; we only met with it at a few places. Specimens found in the collections are from the following localities: Str.: Kirkebø (L., R., !) with var. *parviflora* Rostr.; Kirkebøholm (R.); Tindholm (R.); Syd.: at Famen (!); Öst.: Kodlen at Ejde (Lomholt) with f. *expallens* Lge (R.).

Fl. July.

71. *Sagina nivalis* (Lindbl.) Fr.

Found here and there on bare stony ground on the higher hills; we met with it on most of the islands, but not on Sandø and Syderø; it has not previously been reported from the islands, probably on account of its having been regarded as a form *S. procumbens* (β *pentamera* Rostr.). Bordø: Højefjæld, 600 m. (!); Fuglø: on rock-ledges 575 m. (!); Nolsø (R., sub. nom. *S. procumbens*); Str.: summit of Bodlafjæld (!); Vaagø: Midvaag (R., sub. nom. *S. subulata*, var. *glabra* Rostr.); Öst.: Rejafjæld 600 m. (!).

Fl. June—July. Fr. August.

72. *S. procumbens* L.

Common everywhere, as well on moist ground in and outside enclosed fields as on moist gravelly spots in the hills and amongst hydrophile mosses.

Rostrup (p. 37) reports the occurrence of 2 forms, viz. α *tetramera* and β *pentamera* of which the latter is distinguished by its pentamerous flowers, somewhat larger petals and longer peduncles; but this latter one judging from his description and a specimen in the collection of the Botanical Gardens is *S. nivalis*, as also mentioned above.

Fl. June—July. Fr. August—September.

73. *S. procumbens* L. \times *subulata* (Sw.) Prsl.; *S. micrantha* Boreau in E. Martin: Catalogue des plantes vasculaires et spontanées des environs de Romorantin 1875; Ref. in Bull de la Soc.

Bot. de France, Revue bibliogr. pp. 186—88, 1875, and Just, Botan. Zahresber. 3, 1875, p. 682. — *S. procumbens* \times *subulata* nom. nud., Rostrup: Vegetationen ved Klitmøller i Thy, Botan. Tidsskr. vol. XIX. 1895. p. XLVIII.

Amongst the material of the genus *Sagina* collected by Rostrup, some specimens were found which I must regard as a hybrid form between *S. procumbens* and *subulata*. A hybrid like this is mentioned briefly (according to reports) by E. Martin in his above-mentioned paper: in »Bull. de la Soc. Bot. de France« we find the following report: »*Sagina* qui paraît être un hybride produit entre la *S. procumbens*, dont il a le port et les tiges radicales, et le *S. subulata*, dont il a la pubescence et qu'il rappelle en partie: M. Boreau lui a donné le nom de *S. micrantha*.« Without having any knowledge of this paper Rostrup, in Botan. Tidsskrift 1895, states that »in the hollows between the downs (at Klitmøller in Thy, Jutland) a hybrid, *Sagina procumbens* \times *subulata* was found at several stations amongst the parent plants.« There is no description of it, but in the collection of the Botanical Gardens in Copenhagen there are some specimens from the stated habitat, and these I have been able to examine. The hybrid resembles in habit mostly *S. procumbens*, but it has a more vigorous rootstock of several years standing. The leaves are glandular-ciliate, the peduncles long and below the flowers glandular-hairy; flowers are smaller than those of *S. subulata*, but somewhat larger than those of *S. procumbens*; capsule not developed; no seed.

The Færøese specimens correspond to the Danish ones, and are from the following localities: Str.: Glyversrejn (R., sub. nom. *S. procumbens*) and Øst.: Ejde (R., sub. nom. *S. subulata*), but a further examination will doubtless prove it to be more widely distributed.

74. *S. subulata* (Sw.) Prsl.

Common in bare, gravelly somewhat damp spots outside enclosed fields and on the hills up to a height of 500 m.

Fl. June—July. Fr. August—September.

Sagina nodosa is reported by Landt (p. 197) to »grow together with the preceding (i. e. *Spergula arvensis*) by Landevaag church,« but as it has not been met with there by others, it is very probable that Landt has confused it with a *Spergula arvensis* with stems strongly swollen at the nodes.

75. *Silene acaulis* L.

Common on the hills, and often right down to the sea on fairly dry, gravelly soil; sometimes bears white flowers.

Fl. May—June. Fr. July—August.

76. *Spergula arvensis* L.

Found here and there in enclosed fields near houses, especially in newly cultivated land; it seems most frequent on Syderö and rarer on Nordreöer.

Fl. July. Fr. August—September.

77. *Stellaria media* (L.) Cyril.

Common in enclosed fields, in manured soil, e. g. on cliffs inhabited by sea-fowl.

On sandy sea-shore near Midvaag on Vaagö we met with a curious compact form (f. *umbellata* n. f.) The inflorescence resembles a glomerule, the upper internodes being short and the upper leaves developed into bracts.

Fl. June—July. Fr. July—September.

78. *S. uliginosa* Murr.

Common in and by small streams, most frequent amongst mosses; only in low-lying regions.

Fl. June—July. Fr. August—September.

Landt's *Stellaria graminea* must doubtless be referred to this species.

Order XIX. CHENOPODIACEAE.

79. *Atriplex Babingtonii* Woods., v. *virescens* Lge.

Rather rare on sea-shores; Bordö: Bordövig (!); Syd.: Kvalbö (R.), Trangisvaag (!), Famien (Simmons); Vaagö: Sörvaag (R.), Midvaag (!).

80. *A. hastata* L.

Found here and there on the sea-shore, especially in the interior of the fjords.

81. *A. patula* L.

Same localities as the preceding species, but more frequent.

These three species flower in July—August and bear fruit in September.

† *Chenopodium album* L.

Accidentally introduced at Thorshavn (R.).

Order XX. CORNACEAE.

82. *Cornus suecica* L.

Found here and there outside enclosed fields on small hills or knolls where the vegetation is heathy; it flowers rather sparingly and seldom bears fruit and not every year.

Fl. June—July. Fr. August—September.

Order XXI. CRASSULACEAE.

83. *Sedum Rhodiola* D. C.

Common on rock-ledges both in low-lying regions and far up in the hills.

Fl. June. Fr. August.

84. *S. villosum* L.

Common on bare, damp gravelly spots on the hills as well as by streams in low-lying districts.

Fl. June—July. Fr. end of August.

Order XXII. CRUCIFERAE.

Arabis alpina L.

Kunō: On the hills at some 700 m. (Trevelyan). No specimens are to be found in the collection of the Botanical Gardens, Copenhagen, but as it can hardly be a confusion I give it on the authority of Trevelyan.

85. *A. petraea* (L.) Lam.

Common on bare gravelly stony ground in the hills from about 200 m., also frequent on rock-ledges and in crevices of rocks.

It varies considerably as regards the dentation and hairiness of the leaves, the number of stem-leaves, and the size and form of the petals.

Fl. June—July. Fr. August.

Older authors have given this species many names: *Arabis hispida* f. *hastulata* Horn. is the hairy form; *Cardamine faeroënsis* Horn. the glabrous form with deeply pinnatifid leaves; and lastly Martins's *Lepidium alpinum* (*Hultschinsia alpina*) is doubtless also identical with the latter form.

† *Brassica campestris* L.

Rather common as weed in corn and potato fields.

Fl. beginning of July. Fr. end of August.

† *B. Napus* L.

Weed amongst corn. Syd.: Frodebø (W.).

† *B. nigra* (L.) Koch.

Weed at Thorshavn (R.).

86. *Cakile maritima* Scop. var. *latifolia* (Poir).

Frequent on sandy sea-shores especially in the interior of the fjords; met with on Sandö, Str., Syd. and Vaagö.

Fl. June. Fr. August.

87. *Capsella bursa pastoris* (L.) Moench.

Rather common in inhabited places, round houses and in fields.

Fl. June—July.

88. *Cardamine hirsuta* L.

The form *campestris* Fr. is spread all over enclosed lands especially in fields in which corn or potatoes have been grown in the preceding year; it gradually merges into var. *silvatica* (Link), which is common on damp, shady rock-ledges and in clefts of rocks; the latter ascends rather far up the hills (e. g. Fuglō 500 m.).

Fl. May—June. Fr. July—Aug.

89. *C. pratensis* L.

Common in low-lying regions on boggy ground especially in moss

carpets by small streams; it is also to be met with in moss carpets and on rock-ledges on the hills (e. g. Kunö at about 550 m.).

Fl. May—June. Fr. very sparingly (August).

Martins's report of *C. impatiens* from the neighbourhood of Thorshavn must undoubtedly be due to a misunderstanding.

90. *Cochlearia officinalis* L.

Commonly dispersed both on the sea-shore, in clefts of rocks and ravines and on gravelly plateaux on the hills.

Fl. May. Fr. July—August.

It is often perennial and flowers several times (see Fig. 1 by Ostenf. I p. 146) especially when growing amongst damp moss in ravines.

All the many different forms of *Cochlearia*, found in the Færøes, pass so imperceptibly into one another, that it seems most natural to name them collectively under one name which includes everything Rostrup l. c. p. 41 names *C. officinalis*, *C. danica* and *C. arctica*; true *C. danica* does not occur on the islands.

91. *Draba hirta* f. *rupestris* (R. Br.).

Found here and there on rock-ledges and in clefts often far up the hills (e. g. Öst.: Fuglefjordsfjæld at about 600 m. and Rejafjældstinde, 685 m.) and seldom in low-lying regions; dispersed over all the islands; rarest on Syd. and Sandö (Syd.: Tværaa (!)).

The *D. corymbosa* from Hestö reported by Rostrup l. c. p. 40. is either a *D. hirta* which looks rather curious because the pods contain no developed seeds or perhaps a hybrid between *D. hirta* and *D. incana*.

Fl. June. Fr. July—August.

92. *D. incana* L.

Rather common on all the islands on rock-ledges and in ravines not so far up the hills as the preceding.

Fl. June—July. Fr. July—August.

Draba verna is reported by Landt to occur here and there on the hills, but this statement must be due to a misunderstanding.

† *Raphanus Raphanistrum* L.

Accidentally introduced at Thorshavn (R.).

† *Sinapis alba* L.

Accidentally introduced at Thorshavn (R.) and Kirkebø (!) on Str.

Fl. August.

† *S. arvensis* L.

Accidentally introduced; Str.: Thorshavn (R.); Kirkebø (!); Vaagö: Sörvaag (R., Lomholt).

Fl. July. Fr. August.

93. *Subularia aquatica* L.

Grows under water on the gravelly bottom of several small lakes; Sandö: lake on Vardebakken at some 300 m. (!), Leinumvatn and Miavevatn (!); Öst.: Kornvatn near Næs, at some 100 m. (W.).

Fl. July. Fr. August.

Landt (l. c. p. 204) mentions that *Nasturtium officinale* occurs frequently in enclosed fields especially in fields »which have been cultivated the year before«; this explains the confusion with *Cardamine hirsuta* L. Also Hornemann reports that it was found by Lyngbye, but a specimen in the collection of the Botanical Gardens, Copenhagen, gathered by the latter and labelled *Sisymbrium Nasturtium*, is a young not flowering plant of *Cardamine pratensis*, so even this statement is incorrect.

Order XXIII. DROSERACEAE.

94. *Drosera rotundifolia* L.

Very rare; Sandö: Nigittjern near Sands (R.); Syd.: near Tværaa and Frodebö (R.). Occurred in a carpet of *Sphagnum* on Sandö, fruiting freely by the end of August, but the specimens were small and slender, the inflorescences short and few-flowered.

Order XXIV. EMPETRACEAE.

95. *Empetrum nigrum* L.

Common everywhere on not too moist soil, both in the lowlands and on the highest hills.

Fl. May. Fr. August, but fruiting very sparingly and differently every year.

Order XXV. GERANIACEAE.

† *Geranium molle* L. (?).

A young not flowering specimen found as a weed in a garden at Thorshavn (R.).

96. *G. silvaticum* L.

Rather common on luxuriant rock-ledges, but only in the lowlands.

Fl. June—July.

Martins mentions *G. pratense*, but it has doubtless been confused with the above-mentioned.

Order XXVI. HALORAGIDACEAE.

97. *Muriophyllum alterniflorum* D. C.

Common in the numerous small lakes and in the streams running out of them.

Fl. beginning of July.

Order XXVII. HYPERICACEAE.

98. *Hypericum pulchrum* L.

Common on rock-ledges and on hilly slopes; requires fairly dry soil and favourable exposure and occurs most frequently in the prostrate or slightly ascending and slender form (f. *procumbens* Rostr. l. c. p. 34), but in good fertile soil the erect normal form can also be met with.

Fl. July. Fr. August—September.

99. *H. quadrangulum* L.

Only at Sörvaag on Vaagö, on grassy hill-slopes near the sea (Landt, Lyngbye, R.).

Lyngbye's specimens in the collection of the Botanical Gardens, Copenhagen show that Trevelyan was wrong in stating that Lyngbye had found *H. perforatum*, as Lyngbye's specimens are *H. quadrangulum*.

Order XXVIII. LINACEAE.

100. *Linum catharticum* L.

Common on grassy slopes in the lowlands on not too damp ground, but not higher up the hills. It seems always to occur in a biennial state.

Fl. July. Fr. August—September.

Order XXIX. OENOTHERACEAE.

101. *Chamaenerium angustifolium* (L.) Scop.

Found here and there at Sundelaget: Str.: Kalbak (H. C. Møller), Torsvig (R., ?); Öst.: Östnæs near Næs (?), Selletræ (?), between Svinaa and Lysaa (?); beyond this place only found near Vaag on Syd. (Lyngbye, ?).

Grows on sunny rock-ledges and ravines and does not seem to thrive, as it seldom flowers and hardly ever bears fruit.

Fl. end of August.

102. *Epilobium alsinifolium* Vill.; *E. origanifolium* Lam.

Common in moss by streams and on damp rock-ledges. It extends from the sea-shore to the highest altitudes (e. g. Vid.: Villingedalsfjæld, 700 m.).

This as well as the two following species flower from the end of June and bear fruit in August.

103. *E. anagallidifolium* Lam.; *E. alpinum* L. p. p.

Rather common on damp rock-ledges, most frequently together with the above-mentioned allied species, but it does not extend to the low-lying regions so frequently as this does. It is rare on Syd., Sandö and South-Str.

The var. *dasy carpum* mentioned by Rostrup l. c. p. 32 is not the true *dasy carpum* Hartman, which according to Haussknecht is identical with the below-mentioned hybrid. Rostrup's *dasy carpum* is only a form of *E. anagallidifolium* with capsule hairy underneath.

E. anagallidifolium Lam. × *palustre* L.

Kunö, near the village of Kunö, we gathered a few specimens of a *Epilobium*, which I have referred to this hybrid; it was growing in company with *E. anagallidifolium*, and *E. palustre* also occurred near it.

104. *E. lactiflorum* Hausskn.; *E. roseum* Rostr. l. c. p. 32, non Schreb.

Frequently found together with the two above-mentioned; rarest on Syd. and Sandö, but more frequent than *E. anagallidifolium* and as *E. alsinifolium* it occurs sometimes in the lowlands in gravels by streams and such like places.

105. *E. montanum* L.

Found here and there on luxuriant sunny rock-ledges in low-lying regions; sometimes as weed in gardens. We met with it on Kunö, Nolsö, Skuö (R.), Str., Syd. and Vaagö.

Fl. July. Fr. August—September.

106. *E. palustre* L.

Common in damp ground, especially along streams, but only in low-lying regions.

Flower and fruit as the preceding.

Order XXX. PAPAVERACEAE.

107. *Papaver radiculatum* Rottb.; *P. nudicaule* Auctt., non L.

Only met with on the highest hills on bare gravelly ground and in clefts of rocks. Bordö: Holgafjæld, 470 m. (!), Höjefjæld, 620 m. (!); Fuglø: on the hill at some 600 m. (!); Kalsö: Blankeskaalefjæld, 6—800 m. (Lomholt, !); [Str.: ?, Landt]; Vid: Villingedalsfjæld (R.; 650 m. !), Malingsfjæld, 625 m. (!), near Vedvig (H. Jonsson); Öst. (R.).

Fl. June—July. Fr. August.

Order XXXI. PAPILIONACEAE.

108. *Lathyrus pratensis* L.

Rather rare in enclosed fields near some villages. Sandö: Sands (R., !); Str.: Torsvig (!); Syd.: Kvalbø (R.), Hove (R.), Porkere (L.), Næs (!), Sunnbø (C. Jensen); Vaagö: Sandevaag (Landt).

Fl. end of July. No fruit.

109. *Lotus corniculatus* L. f. *carnosa* (Pers.).

Found here and here on low rock-ledges and slopes near the sea; found on Sandö, Str., Syd., Vaagö and Vid.

Fl. July. Hardly fruiting.

† *Pisum sativum* L.

Accidental weed; Str.: Vestmanhavn (!); Syd.: Tværaa (R.), Skarvetange (!).

† *Tripolium hybridum* L.

Accidentally introduced or cultivated; Str.: Thorshavn (Simmons), Kirkebø (!); Syd.: Trangisvaag (H. C. Møller).

† *T. pratense* L.

As above; e. g. Str.: Kirkebø (!).

† **T. procumbens** L.

A weed at Thorshavn (H. C. Møller).

110. T. repens L.

Common in enclosed fields and just beyond the stone walls, rarely far away from houses, e. g. on the cairn-road between Ördevig and Høve on Syd., at about 300 m. (!).

Fl. July. Fr. ?

111. Vicia Cracca L.

Found here and there in enclosed fields on most of the islands, but in the Nordreöer only on Kunö.

Flowers sparingly in July and with only a few small pods developed (on Sandö, end of August).

Order XXXII. POLYGALACEAE.

112. Polygala serpyllacea Weihe; *P. depressa* Wend.; *P. vulgaris*, var. *grandiflora* Kurtz l. c., non Bab.

Common everywhere in low-lying regions, but not far up the hills.

Fl. May—November. Fr. August.

113. P. vulgaris L. var. *Ballii* (Nym.) Ostenf. II p. 13; *P. Ballii* Nym. Consp. Fl. Europ. p. 83; *P. buxifolia* Ball in herb.; *P. vulgaris*, var. *grandiflora* Bab. Man. 7 ed.; Alf. Bennett, Consp. Polygalarum Europ., Journ. of Botany 1878, Sep. p. 7.

Fairly common on all the islands, but not nearly so frequent as the preceding and on drier ground, prefers grassy hill-slopes in low-lying regions.

As I have previously fully reported, I believe the *vulgaris*-form which occurs on the Færöes (see fig. 26 p. 72) to be identical with the var. *grandiflora* described by Babington (the name cannot be retained on account of a previous application of it, as De Candolle has a var. *grandiflora*) and the well-known authority on *Polygala*, Prof. Chodat, Geneva, corroborates this opinion.

Fl. beginning of July; Fr. August.

Order XXXIII. POLYGONACEAE.

114. Koenigia islandica L.

Common on bare gravelly flats on hill-plateaux and outside enclosed land; occurs at high altitudes as well as in low-lying regions and then frequently in a large-sized form on the gravelly shores of lakes.

Fl. June—July. Fr. August.

115. Oxyria digyna (L.) Campd.

Common in ravines, on rock-ledges and on hill-plateaux.

Fl. June—July. Fr. August.

116. *Polygonum amphibium* L.

Rare, and doubtless originally accidentally introduced, but it continues to exist by reproducing itself. The land form, which occurs in enclosed fields does not flower at all, but on Sandø Rostrup met with the aquatic form bearing some spikes; in 1897, however, we did not find any flowers in the same locality.

Sandø: Sands (R., †); Syd.: Vaag (R., †) and Sunnbø (C. Jensen).



Fig. 26. *Polygala vulgaris* L. var. *Ballii* (Nym.) Ostenf. Specimen from Viderö (Östvig, Aug. 9th, 1897).
($\frac{1}{2}$ natural size).

117. *P. aviculare* L.

Found here and there on the sea-shore, and as a weed at the villages.

Fr. end of August.

† *P. Convolvulus* L.

A weed at Thorshavn (R., W.), but does not flower.

118. *P. viviparum* L.

Common outside enclosed fields and on the hills. It occurs sometimes with perfectly glabrous leaves and sometimes with leaves hispid beneath.

Fl. June—July.

Landt mentions *P. Persicaria* and *P. Hydropiper*. Is this not a confusion with Danish states?

119. *Rumex Acetosa* L.

Common both in low-lying regions and on rock-ledges and also on hill-plateaux, where it often occurs in a small dwarfish form only a few cm. high (f. *alpina* Rostr. p. 56). The hill forms cannot, however, be referred to *R. arifolius* All. as they have shiny, dark-brown nuts, at least that is the case with the specimens which we brought home e. g. Bórdö: Holgafjæld, 475 m.).

Fl. June-July. Fr. August.

† *R. Acetosella* L.

Weed in the rectory garden at Thorshavn (W.). Reported by Landt as not rare, but this statement must be due to a misunderstanding.

Fl. August.

120. *R. crispus* L.

Found in enclosed fields, but rare; Sandö: Sands (Raben,!) and Trödum (!); Str.: Kirkebö (!); Syd.: Tværaa (!).

This and the following species flower in July and bear fruit in August—September.

121. *R. domesticus* Hartm.

Common in enclosed fields at the villages, often in considerable quantities.

122. *R. domesticus* Hartm. × *R. obtusifolius* L.

Rather common together with the preceding and the following.

123. *R. obtusifolius* L. f. *agrestis* Fr.; *R. divaricatus* Fr.

Common in the same localities as the preceding.

The above-mentioned *Rumex*-species of the group *Lapathum* Campd. were all doubtless originally introduced by human agency, but have now become thoroughly naturalized.

Order XXXIV. PORTULACACEAE.

124. *Montia rivularis* Gmel.

Very common partly as a weed in enclosed fields and partly amongst moss along streams, but not at high altitudes.

Fr. July.

Rostrup l. c. p. 37 records also *Montia fontana* L. a. *minor* (Gmel.) as occurring »in considerable quantities as a weed everywhere in enclosed fields«, but adds that a gradual transition to *M. rivularis* is to be met with. »and even the most typical (!) specimens hardly 1/2 an inch high had frequently as finely netted and shiny seeds as the latter«; this shows that only *M. rivularis* is to be met with, as is also proved by Rostrup's specimens. *M. minor* appears to be a species with a more limited and southern distribution than *M. rivularis*, which, e. g. occurs both in Iceland and in Greenland.

Order XXXV. RANUNCULACEAE.

125. *Caltha palustris* L.

Common on damp ground, by preference in watercourses and pools of water, but hardly up in the hills.

— — var. *radicans* (Forst.); *C. palustris*, var. *zelandica* Beeby, The Scottish Naturalist 1887—1888; vide E. Huth: Monographie der Gattung *Caltha*, 1891, and Günther Beck: Gliederung der *Caltha palustris*, Verhdl. d. zoolog-botan. Gesellsch. in Wien 1886.

Near Kvalbø-rectory on Syd. we found a form which matches *C. radicans* Forst. It doubtless gradually merges into the typical forms and can perhaps hardly claim to be called a variety: intermediate forms with characteristic crenate leaves like the leaves of the *C. radicans*, but stems not rooting, were gathered by Rostrup near Thorshavn.

Fl. May. Fr. July.

126. *Ranunculus acer* L.

Common everywhere in and outside enclosed fields, on rock-ledges and on the hills; in the latter frequently as f. *pumila* (Whbg.); e. g. Bordö: Höjefjæld, 500 m.; Kalsö: Blankeskaalefjæld at some 750 m.; Vid.: Malingsfjæld 600 m. The lower part of nearly all the Færøese specimens is covered with stiff and spreading and very often dense, rusty-brown hair.

Fl. June—July. Fr. August.

According to Trevelyan and Hornemann, *R. nivalis* was found by Lyngbye, and in the Museum of the Botanical Gardens, Copenhagen, there are a quantity of Lyngbye's specimens labelled with this name, but this is not *R. nivalis*, but the above-mentioned f. *pumila*. Further Trevelyan records *R. auricomus* and *R. hirsutus* (*R. sardous*) and Landt mentions a »*R. hirtus*«, but I regard all these statements as referring to *R. acer*, the richly varied forms of which have caused these confusions.

127. *R. Flammula* L.

Common in low-lying regions amongst mosses and along streams, often varying with regard to size and form.

— — f. *speciosa* nov. forma, fig. 27. The plant erect-ascending or erect, glaucous; stemleaves about 10 mm. broad, petals 6—8, large (about 10 mm. long, 8—10 mm. broad).

This handsome form occurred on Str. near Örerenge mixed with the typical form, but without merging into it.

C. Bailey (Forms and Allies of *Ranunculus Flammula* L.; Journ. of Botany, 1887, p. 135) mentions a form (»the large-flowered coarse growing erect form«), which perhaps is identical with my f. *speciosa*, but he gives it no name.

— — var. *reptans* (L.).

Sandö: Sandvatn (R., !); Öst.: Toftevatn (L., !). It grew submersed and was somewhat coarser than is common with the Scandinavian specimens.



Fig. 27. *Ranunculus Flammula* L. f. *speciosa* Ostenf. Specimens from Strömö (Örereinge, July 31st, 1897).
($1/2$ natural size).

128. *R. glacialis* L.

Not rare in the loose gravel on the highest hills from about 500 m. upwards on Vaagö, Str. and Öst. In the Nordreöer only found on Kalsö at Blankeskaalefjæld 6—800 m. (Lombolt, !) and does not occur on Sandö and Syd.

Fl. May—June. Fr. August.

129. *R. repens* L.

Common in enclosed fields, occurring especially in considerable quantities in places where corn or potatoes have been grown the year before. It is very seldom met with far from houses, but Rostrup mentions Tjørnevigkamp on Str. and the top of Nolsö.

Fl. June—July.

130. *Thalictrum apinum* L.

Common outside enclosed fields on the hill-sides extending from the shore-line far up the hills.

Fl. June—July. Fr. August.

Landt records *Ficaria ranunculoides* from Kirkebö, but probably he mistook for it the leaves of young specimens of *Calltha*.

Order XXXVI. ROSACEAE.

Alchimilla. In order to find out which species of this genus, especially of the group *vulgaris*, occur on the Færöes, we made considerable collections which we submitted to the well-known authority on *Alchimilla* Dr. Buser, Geneva, for his opinion. He very kindly determined them for us and came to the following conclusion.

131. *A. alpina* L.

Common on all the islands, mostly on rock-ledges and in crevices on fairly dry ground, and on hill-plateaux; it extends right down to the sea, but occurs most frequently in the higher regions.

In gravelly streams near Örerenge on Str. and in a deep cleft of rock at Kvanhaugen on Syd. we found a f. *truncata* Buser, the small leaves of which had blunted tips.

132. *A. faeroënsis* (Lge.) Buser, Ber. d. schweiz. botan. Gesellsch. 1894 and Bull. de l'Herb. Boissier, II, 1894 p. 39; *A. fissa*, v. *faeroënsis* Lange, Nomenclator Floræ Danicæ, 1897; *Al. fissa* Rostr. p. 30.

Common in the same localities as the preceding, both far up the hills and in low-lying regions. On exposed spots it becomes small and stunted and then appears as f. *pumila* (Simmons: Några bidrag til Færöernes flora 1; Botan. Notiser 1896 p. 70; see also Simmons, Om *Alchemilla faeroënsis* (Lge) Buser, och dess artsrätt, Botan. Notiser 1898 p. 68); f. *vegeta* Buser with leaves less hairy, nearly glabrous beneath is a contrast to it (cfr. Simmons 1896, l. c. p. 70); it occurs in very shady places in clefts of rocks.

133. *A. filicaulis* Buser, Bull. d. l'Herb. Boissier, I, 1893, App. II.

Very common beyond enclosed fields and on the hills, in fact, wherever the soil is fairly good and not too damp; f. *typica* as well as var. *vestita* Buser is to be met with, and the latter is perhaps the most frequent; on the other hand we only found the other extreme form: var. *denudata* Buser at one station (Vid.: Bergsmunna, 350 m.).

To this species belong the specimens recorded by Simmons (1896 p. 71) and Ostenf. (II p. 13) as *A. pubescens* and Rostrup's var. *subsericea*.

134. *A. Wichuræ* Buser, Bull. de l'Herb. Boissier, II, 1894.

Rather common on rock-ledges and in clefts, especially in rather damp places; it does not occur near enclosed fields and in low-lying regions, but extends up the hills. It seems to prefer such habitats as those of *A. faeroënsis* to those of *A. filicaulis*.

To this belongs *A. oblusa* recorded by Simmons (1896 p. 71) and Ostenf. (II p. 13), further *A. alpestris* recorded by Simmons p. 71 and *A. vulgaris* recorded by Rostrup l. c. p. 30.

All these species of *Alchimilla* flower in June and bear fruit in August, but *A. filicaulis* is perhaps the earliest and *A. Wichuræ* the latest.

135. *Dryas octopetala* L.

Rare and found only on some of the highest hills on the northern islands; Fuglō: rock-ledges at some 600 m. (!); Vid.: Malingsfjæld (Mohr: from 260—700 m.!) — on the other hand it is absent on some of the adjacent hills of the same altitude, e. g. Mornefjæld and Villingedalsfjæld —; Øst.: Kodlen near Ejde (Kissmeyer, R.) and several other places (R.).

Fl. June—July. Fr. August.

136. *Geum rivale* L.

Only found on Str. in the ravine near Vestmanhavn, where large vigorous specimens occur over a small area; it flowers freely.

Fl. July. Fr. ?

137. *Potentilla anserina* L.

Rather frequent on sandy and gravelly spots on the sea-shore and sometimes in inhabited places.

Fl. July. Fr. August—September.

138. *P. palustris* (L.) Scop.

Only found on Syd. in the valley near Kvalbō (R.,!) and according to an old statement (Mohr) near Gaasedal on Vaagō.

Fl. July.

139. *P. erecta* (L.) Dalla Torre; *P. Tormentilla* Scop.

Common everywhere on peaty soil in low-lying regions and also rather high up the hills.

Fl. June—July. Fr. August—September.

140. *P. verna* L., *P. maculata* Pourr., *P. ambigua* Rostr. l. c. p. 29.

Only found on Øst: Kodlen near Ejde (R.) and Refafjældstinde (!), 400 m.

Specimens which we collected at the end of August showed no trace whatever of having flowered, but Rostrup found it in flower on Kodlen.

141. *Rosa mollis* Sm. (determ. O. Gelert).

Str.: Vestmanhavn, somewhat north of the village (H. C. Møller; C. Jensen); Øst: near Ejde at Brimnæs (Landt, Lomholt); a rose is further said to grow at Haldersvig on Str. (according to Svabo).

Flowered near Ejde in July 1897, was not in bud near Vestmanhavn in June 1896. Fr.?

142. *Rubus saxatilis* L.

Found here and there on rock-ledges and hill-sides with favourable and fairly dry aspect, but not far up the hills.

Fl. July. Bears fruit by end of August, but only very sparingly and exceptionally.

143. *Sibbaldia procumbens* L.

Found here and there on the hills from about 400 m. upwards on most of the islands but not on Sandö and Syd; is only exceptionally met with lower down, e. g. Bordö: Holgafjæld at some 250 m. It occurs both in *Grimmia*-carpet, on small plots of grass and on bare stony ground.

Fl. June. Fr. August.

144. *Spiraea Ulmaria* L.

Found here and there in enclosed fields by ditches and streams, but only in low-lying regions.

Fl. July. Fr.?

Order XXXVII. SALICACEAE.

145. *Salix glauca* L.; *S. arctica*, Trevelyan; *S. lanata*, var. *rotundifolia* Rostr., Ostenf. I.

Rare and only found on the hills on the northern islands; Fuglø: rock-ledges 600 m. (!); Kunö: hills on the south side from about 250 m. (!); Vid: Mornefjæld and Bergsmunna from about 250 m. (!); Malingsfjæld (Trevelyan, Lomholt, !).

Fl. May. Fr. July—August.

146. *S. herbacea* L.

Common on the hills partly on *Grimmia*-heaths and partly on bare stony ground; also frequently met with on rock-ledges in low-lying regions and then often in a large and vigorous form with woody stem and larger leaves (f. *fruticosa* Fr.).

Fl. May. Fr. July—August.

147. *S. phylicifolia* L.; *S. hastata*, Trevelyan.

Only in low-lying regions, several places along streams; Sandö: basalt-rocks at Trødum (R.); Str: Kvalvig (R.); Syd: Ördevig (Landt, !) and near Trangisvaag by the stream (!); Vaagö: near Sörvaagsvatn (R., C. J.); Øst: near Strendre by a stream (R.).

According to Landt p. 333 probably planted at several of these stations.

Fl. May. Fr. July.

That Trevelyan called this species *S. hastata* is proved by a specimen in the collection of the Botanical Gardens, Copenhagen; it is labelled, »*S. hastata*, Færøerne, Trevelyan«.

Order XXXVIII. SAXIFRAGACEAE.

148. *Saxifraga decipiens* Ehrh.; *S. caespitosa* Rostr. p. 44.

Common on ledges, in clefts of rocks, on hill-plateaux and near the sea; it occurs in numerous forms.

Fl. June—July. Fr. August.

149. *S. hypnoides* L.

Rather common on damp rock-surfaces and ledges, mostly in moss, both lower down and higher up.

Fl. June—July. Fr. August.

150. *S. nivalis* L.

Rather common in similar places as the preceding, most frequent on the northern islands and from about 300 m.

— — var. *tenuis* Whbg.

Occurs at the same place as the main species and often mixed with, but clearly distinct from it. Bordö: Holgafjæld (!); Fuglô: on the hill at 550 m. (!); Kalsö: at Syderdal (!); Kunö: the south end of the island (!); Str: near Leinumvatn (!); Vid.: Villingedalsfjæld at some 600 m. (!).

Fl. May—June. Fr. August.

151. *S. oppositifolia* L.

Rather common in clefts of rock and on bare stony ground, generally some way up the hills.

Fl. April—May. Fr. July.

152. *S. rivularis* L.

Found here and there in clefts of rocks (often together with *S. nivalis*) on the higher hills from about 500 m. Noticed on most of the islands except Sandö and Syd.

Fr. August.

153. *S. stellaris* L.

Common in damp moss on the hills and along the streams right down to the sea; on bare stony ground it occurs in a dwarf form (f. *pumila* Rostr. p. 44) only 2—3 cm. high.

Fl. June. Fr. August.

Order XXXIX. UMBELLIFERAE.

154. *Angelica silvestris* L.

Rather common on luxuriant rock-ledges in low-lying regions.

Fl. July.

155. *Archangelica officinalis* Hoffm.

Characteristic of cliffs where sea-fowl nest and transplanted thence to inhabited places, it occurs on luxuriant, manured and moist rock-ledge.

Fl. July. Fr. August—September.

156. *Haloscias scoticum* (L.) Fr.

Rather rare, found in sand and on rock-ledge near the sea-shore. Myggenæs (Landt); Sandö: Sands (R., !); Str.: Kirkebö (R.), Tjörnevig (Landt), Höjvig (R.); Syd.: Kvalbö (R., !), Trangisvaag (R., !), Famen (Heiberg-Jürgensen), Vaag (R.); Vaagö: Sandevaag (R.), Bosdalafof (R., !).

Fl. July. Fr. August—September.

Order XL. URTICACEAE.

157. *Urtica dioica* L.

Rather common at inhabited places, in churchyards and near houses; occurs sometimes in debris at the base of hills, thus Rostrup reports it from the western side of Nolsö; on the eastern side of the same island we gathered it on cliffs inhabited by sea-fowl at 200 m.

Fl. end of July. Fr.?

† *Urtica urens* L.

Weed at Thorshavn (Hornemann, R.).

Order XLI. VIOLACEAE.

158. *Viola palustris* L.

Common in pools and bogs in low-lying regions and a little way up the hills.

Fl. May. Fr. July.

159. *V. Riviniana* Rchb.; *V. silvatica*, Rostr. l. c. p. 38.

Common outside enclosed fields on grassy slopes, extends also far up the hills, even up on the plateaux in *Grimmia*-heaths and bears fruit there (probably from cleistogamous flowers), e. g. Kunö, 600 m.; Vid.: Villingedalsfjæld and Malingsfjæld at some 600 m.

Fl. May. Fr. August.

160. *Viola tricolor* L.* *genuina* Wiltr. forma.

Only at a few places in enclosed fields; Str.: Kirkebö (Landt, R., !), Velbestad (Simmons, !); Sandö: Sands (Landt, R., !).

It is perennial which according to Wittrock (*Viola-Studier* I, 1897 p. 59) is the exception in the case of **genuina*.

Fl. and Fr. August.

II. Monocotyledones.

Order XLII. COLCHICACEAE.

161. *Narthecium ossifragum* (L.) Huds.

Very common and characteristic in peaty soil and pools; most widely distributed in the lowlands, but goes up to some 400 m. on the hills, where, however, it hardly flowers. Lomholt's statement (Ostenf. II p. 16) that it is rare in the Nordreöer is not correct, as we found it growing on all the islands. Near Ejde on Öst it occurred together with a lighter-coloured form (f. *pallida*!) with pale yellow petals with greenish exteriors.

Fl. end of July. Fr. September.

Order XLIII. CYPERACEAE.

162. *Carex atrata* L.

Vid.: a few specimens on Mornefjæld on ledges at some 300 m. (!).

Martins's statement (p. 370) that it occurs on the top of Nolsö is, as Rostrup (p. 64) mentions due to its having been mistaken for *C. rigida*, which grows there.

163. *C. binervis* Sm.

Common in the lowlands on fairly dry ledges.

Fl. July. Fr. September.

164. *C. caespitosa* L. × *Goodenoughii* Gay.

Syd.: in a small pool in pasture-land at Tværaa. The specimens collected resemble externally *C. caespitosa*, and I had therefore also referred them to this species, but Mr. Raunkjær who examined the anatomical structure of the leaves arrived at the conclusion that it must be the above-mentioned hybrid, and evidently could not be true *C. caespitosa*. Unfortunately no *C. caespitosa* has appeared in the material gathered by us, and thus it has not hitherto been reported from the Færöes, but it is doubtless to be found there.

165. *C. cryptocarpa* C. A. Meyer; *C. filipendula* Drejer; *C. Lyngbyei* Hornem.

Rather rare on meadows by the sea, often mixed with *C. salina*.

Myggenæs: at the village (C. J.); Str.: Tjørnevig and Kvalvig (R.); Syd.: Kvalbø (R.) and at the head of Trangisvaagfjord (!); Öst: Öre (R.).

Fl. June—July. Fr. August—September.

166. *C. dioica* L.

Found here and there in pools in the lowlands.

Fl. May. Fr. August.

167. *C. echinata* Murr.; *C. stellulata* Good.

Very common in pools and on peaty ground in low-lying regions, also found some distance up the hills e. g. Str: Nigvan, 320 m. (C. J.); Syd.: between Famién and Vaag, at some 350 m (!).

Fl. June—July. Fr. August—September.

168. *C. flacca* Schreb.; *C. glauca* Scop.

Found here and there on ledges and dry places beyond enclosed fields, only in low districts.

Fl. June—July. Fr. August—September.

169. *C. flacca* Schreb. \times *Goodenoughii* Gay, nov. hybr.

Bordö: a rock-ledge near Bordövig (!).

We gathered a curious species of *Carex* on Bordö, which, according to Mr. Raunkjær's anatomical examination, turns out to be the above-mentioned hybrid not hitherto known; its external characteristics also prove this: the leaves glaucous on the under-side from a waxy covering: runners short and vigorous with shining-brownish sheaths like those of *C. flacca*; with regard to its inflorescence and other characteristics it resembles *C. Goodenoughii*; but it is sterile.

We only saw a single tuft in the locality in question.

170. *C. flava* L.; *C. Oederi*, Oslenf. II p. 16.

Common in bogs and pools in the lowlands and up to 2—300 m. (on Syd., between Famién and Vaag, at about 350 m.).

I was formerly of opinion that the form of the group *Flava* which occurs on the Færöes ought properly to be called *C. Oederi*, as the specimens are mostly small, with the lowest fertile spike separated from the others, all the spikes rather small and the beak of the fruit slightly curved downwards; but on further investigation I arrived at the conclusion that Rostrup was right in naming them *C. flava*. Strangely enough *C. flava* is both in Iceland and Greenland replaced by *C. Oederi*, while in the Færöes the reverse is the case.

Fl. July. Fr. September.

171. *C. flava* L. \times *fulva* Good; *C. fulva* Rost. l. c. p. 65, et Auctt.

Grows together with the two primitive species at a few stations; Kunö: at the southern end of the island, at some 100 m. (!); Syd.: near Tværaa (!) and Hove (R.).

172. *C. fulva* Good.; *C. Hornschuchiana* Hoppe.

Rather rare in bogs. Kunö: at the southern end of the island, at some 100 m. (!); Str.: at the ravine at Vestmanhavn (!); Syd.: at several stations, e. g. Kvalvig (!), Trangisvaag (!), Tværaa (R., !), Frodebö (R.) and Hove (R.).

173. *C. Goodenoughii* Gay; *C. vulgaris* Fr.; *C. turfosa* Rostr. l.c. p.63.

Very common in pools and bogs in low-lying regions and some way up on the hills; as usual varying greatly and hybridizing with several species.

Fl. June. Fr. August—September.

174. *C. Goodenoughii* Gay \times *rigida* Good.

Mr. Raunkiær kindly examined our *Distigmaticae*-material and found specimens of this hybrid from the following stations — Kalsö: basalt-rocks near Mygledal (!); Kunö: hill-plateau at the southern end, at some 600 m.(!); Syd.: Kvalböfjæld, at some 300 m.(!); Öst.: the pass (Skardet) between Fuglefjord and Skaalefjord, at some 475 m. (!).

It seems on the whole to be rather commonly distributed where the habitats of the two primitive species meet; the specimens are generally quite sterile.

175. *C. incurva* Lightf.

Found here and there on sandy soil near the sea-shore; Sandö: Sands (R., F.B.); Str.: Højvig (L.), Saxen (R.); Syd.: Kvalbö (R., !), Lamba-Ejde near Kvalvig (!); Öst.: Mölen near Ejde (C. J., !).

Fl. May. Fr. August.

176. *C. leporina* L.

Hornemann mentions it as found in the Færöes on the authority of Lyngbye, but since then it has not been found until we met with it on the remote island of Svinö, where it grew luxuriantly on a damp spot by a stream near the village.

Fr. August.

177. *C. panicea* L.

Common in bogs and pools in the lowlands, only exceptionally ascending some way up in the hills (Vid.: Bergsmunna, at some 350 m.(!)).

Fr. September.

178. *C. pilulifera* L.

Common on grassy hill-slopes in low-lying regions (Str.: Nigvan, at some 200 m. (C. J.)).

Fl. June. Fr. August.

179. *C. pulicaris* L.

Common in pools in low-lying regions, more rare some way up in the hills (Syd.: between Famen and Vaag, at some 350 m. (!)).

Fl. May. Fr. August.

180. *C. rigida* Good.

Rather common on the hills and almost invariably to be found in *Grimmia*-carpets; on Syd., however, it appears to be rather rare, as we

only noticed it between Famien and Vaag at some 350 m. (!) and on a rock-ledge in Hovedalen at some 100 m.; the latter locality is the lowest at which we noticed it. The following are some of the highest hill localities: Fuglō, 600 m. (!); Kalsō, Blankeskaalefjæld, 800 m. (!); Vid.: Villingedalsfjæld, 700 m. (!); Öst.: Rejafjældstinde, 750 m. (!).

Fl. June—July. Fr. August—September.

181. *C. salina* Whbg. * *Kattegatensis* Fr.; *C. halophila*, Rostr. p. 64; *C. acuta*, Rostr. p. 63.

Forms large, close societies on flat meadows by the fjords. Here as elsewhere it is rather variable; but it is only the large high forms, varying with regard to the form and colour of the scales, which occur on the islands.

Bordö: Klaksvig, in ditches in enclosed fields (!); Sandö: at Sandsvatn (R., F. B., !); Str.: Kvalvig (R., W.); Syd.: rather common, gathered at the following places: Kvalbø (R.), Skarvelange at Frodebø (R., !), the head of Trangisvaagfjord (!), Vaags Ejde (!); Öst.: Selletræ (!).

Fl. June. Fr. September (?).

182. *C. saxatilis* L.; *C. pulla* Good.

Common on the hills on Str. and Öst. (Vaagö?) in small pools, most frequent from about 450 m.; strangely enough, absent on the Nordreöer, but found on Sandö at Trødum (R.), and Syd. between Famien and Vaag at some 350 m. (!).

Fl. June—July. Fr. August—September.

The following species of *Carex* are recorded by older authors, but have not been found since:

C. canescens according to Hornemann gathered by Lyngbye, but the specimens in the collection of the Botanical Gardens, Copenhagen, labelled with this name are young *C. echinata*; they were formerly in Liebman's Herbarium and are doubtless gathered by Lyngbye.

C. capillaris L. reported by Hornemann.

C. pallescens L. reported by Trevelyan as gathered by Lyngbye.

C. praecox Jaex. (*C. verna* Vill.) reported by Drejer as gathered by Lyngbye.

183. *Eriophorum polystachyum* L.; *E. angustifolium* Roth.

Very common in pools, often in considerable quantities, but seldom flowering and fruiting freely, as the sheep nibble the tops; it grows rather far up in the hills.

Fl. May. Fr. August.

184. *E. vaginatum* L.

Found here and there; as far as we noticed only a few specimens occurring at each station; met with both in the lowlands and on the hills.

Bordö: Skaarene, at some 400 m. (!), Klakken, at some 400 m. (!); Nolsö (R.); Str. Kvalvig (R.), Kvivig (L.), Örerenge (!); Syd.: near Trangisvaag (!), the pass at Örnefjæld at some 300 m. (!); Öst.: Næs (L.).

Fl. May. Fr. August.

185. *Heleocharis multicaulis* Sm.

Syd.: Kvalbø (L.).

Well-developed specimens with ripe fruits were gathered by Lyngbye and are to be found in the Herbarium of the Botanical Gardens, Copenhagen; nobody else has noticed this species on the islands.

186. *H. palustris* (L.) R. Br.

Found here and there in pools and on the shores of lakes in the lowlands on Syd., Sandø and South-Str.

Fl. July. Fr. August.

187. *H. uniglumis* Link.

Found as the preceding species, but has not been kept distinct from it by most of the authors.

Sandø: Nigitjern near Saltvigsvatn (!); Str.: Kvalvig (R.); Syd.: lake in Kvalbø-Ejde (!), head of Trangisvaagfjord (!).

Fl. July, no fruit Aug. 18 th. (on Sandø), so it probably does not bear fruit.

H. acicularis (L.) R. Br. Mentioned by Landt, but is probably a confusion of *S. caespitosus*.

188. *Scirpus caespitosus* L.

Very common in pools and bogs both in the lowlands and on the hills; often forms the chief part of the vegetation over rather damp areas.

Fl. June. Fr. August.

189. *S. pauciflorus* Lightf.

Found here and there in bogs in the lowlands.

Bordø: Klaksvig (!); Sandø: at Sandsvatn (!); Str.: Kvalvig (R.), Ørerenge (!); Syd.: Kvalbø (R., !), Frodebø (R.), south side of Trangisvaagfjord (!); Øst: Kornvatn near Næs, at some 100 m. (!).

Fl. July. Fr. end of August.

S. fluitans L. is mentioned by Trevelyan and *S. maritimus* L. by Landt; the latter is said to »grow on the sea-shore«, but this statement must be due to a confusion of Danish and Færøese states.

Order. XLIV. GRAMINEAE.

190. *Agropyrum junceum* (L.) Beauv.

On sandy sea-shore, rare. Sandø: on the downs at Sands. (R., !); Syd.: Kvalbø (R.).

Fl. end of July, no fruit as late as the end of August.

191. *A. junceum* (L.) Beauv. × *repens* (L.) Beauv.; *A. acutum*, Rostr. l. c. p. 65.

Mixed with the preceding on Sandø: the downs at Sands (R., !); (Vaagø: Sørvaag (R.)?).

192. *A. repens* (L.) Beauv.

Not rare at inhabited places, partly in enclosed fields and partly on the sea-shore.

Sandö: Sands (R., †); Str.: Tjörnevig (Landt), Torsvig (†), Thorshavn (L., R., †), Kirkebö (†); Syd.: Porkere (R.); Vaagö: Midvaag (R., †), Sandevaag (†), Sörvaag (L.); Öst.: Næs (†). Appears to be absent from the Nordreöer.

Fl. end of July. No fruit noticed as late as the end of August.

193. *Agrostis canina* L.

Common in lowlands, in meadows and pools; also rather widely distributed in the hills on bare stony ground. The hill-form with its dense growth in tufts somewhat resembles *A. borealis* Hartm. (*A. rubra* Whbg.) and must properly be referred to var. *montana* Hartm., e. g. Kalsö: Blankeskaalefjæld, at some 600 m. (†); Kunö: hill-plateau at some 650 m. (†); Öst.: Rejafjældstinde, 765 m. (†); Hestö (R.).

An awnless form (var. *mutica* Gaud.) occurs, e. g. at Str.: Thorshavn (†); Syd.: Kvalbö. Pale yellow specimens (f. *pallida* Rehb.) often occur side by side with normal ones. Finally, to this species must be referred a viviparous grass which we gathered on Str.: Vardebakken at some 300 m.

Fl. July.

194. *A. canina* L. \times *vulgaris* L.; Murbeck, De nord-europäiska formerna af släktet *Agrostis*, Botaniska Notiser 1898, p. 10.

A specimen, gathered by C. Jensen on Öst. at the pass Bredaskard, 180 m., when examined, showed that it must be referred to this hybrid. The poll was quite barren.

195. *A. stolonifera* L.; *A. alba*, Rostr. p. 69.

Common in the lowlands, especially in enclosed fields; the var. *maritima* Lam. occurs here and there on the sea-shore, e. g. Str.: Torsvig (†); Sandö: Sands (R.); Syd.: head of Trangisvaagfjord (†); Vaagö: Midvaag (R.).

Fl. July.

196. *A. vulgaris* L.

Common in the lowlands, especially in enclosed fields, but also some way up the hill sides and then often attacked by *Tilletia decipiens*.

Fl. July. (Some specimens were still flowering as late as the end of August).

197. *Aira caespitosa* L.

Common outside enclosed fields in the lowlands, but rare in enclosed fields. It is also common as var. *brevifolia* Hartm. on the hill-plateaux; leaves short and rather broad, spikelets large-flowered. At the latter station, it is often viviparous (*A. alpina* L.) and this form follows the small streams down to the lowlands, where it occurs in gravel and in damp ravines.

Fl. July.

198. *A. flexuosa* L.

Common on dry rock-ledges and hill-plateaux, especially in *Grimmia*-heath. Most of those we noticed must be referred to f. *montana* (L.) which is characterized by its large spikelets and its deeper colour. At a few stations we noticed a viviparous form: Bordø: Gjerdum Rejn, at some 420 m. (!), and Vid.: top of Malingfjæld, 720 m. (!).

Fl. July, Fr. end of August.

199. *Airopsis praecox* (L.) Fr.

Rather common in dry localities in the lowlands on Syd. We did not meet with it on the other islands, but that was perhaps because it was so late in the year. Rostr. l.c. p. 68 merely reports it »here and there« without making any definite statement as to its distribution; but in the herbarium only specimens from Syd. are to be found.

Fr. end of July.

200. *Alopecurus geniculatus* L.

Common in enclosed fields, especially in fields which have been cultivated the year before; but not met with outside the enclosed land, nor, consequently, on the hills.

Fl. June—July.

† *A. pratensis* L.

Cultivated at Thorshavn and thence spread in single specimens to the enclosed field. (R.!).

201. *Anthoxanthum odoratum* L.

Very common in the lower districts on hill-slopes and in fields, absent in the higher regions (met with up to some 300 m.). A hairy form f. *villosa* Loisl. was found on Str.: Kvivig (R.); Syd.: Tværaa (!), Kvalbø (L.).

Fl. June—July.

† *Apera spica venti* (L.) Beauv.

Accidentally introduced; Str.: at Thorshavn (R.).

† *Avena sativa* L.

Cultivated at a few places, e. g. Str.: Kirkebø (!).

† *A. strigosa* Schreb.

A weed in corn; Str.: Thorshavn (R.); Syd.: Trangisvaag and Hove (R.); a few specimens on the sandy shore at the head of Trangisvaagfjord. (!).

† *Briza media* L.

Accidentally introduced; Str.: between Thorshavn and Sandegærde (R.).

† *Bromus mollis* L.

Accidentally introduced; Sandø: enclosed fields at Sands (!).

Fruit by end of August.

202. *Catabrosa aquatica* (L.) Beauv.

Syd.: Kvalbø, in sea-sand at the mouth of a small watercourse at the head of the bay. (!).

Fl. end of July.

† *Dactylis glomerata* L.

Occurs only where it has spread after being cultivated, viz. Str.: Thorshavn (!), Kirkebø, cultivated (!).

203. *Digraphis arundinacea* (L.) Trin.

Rather common by streams in enclosed lands.

Flowers late and sparingly (July—August) and hardly bears fruit.

204. *Elymus arenarius* L.

Rather rare on sandy sea-shores.

Nolsø: near the village (R., !); Sandø: the downs at Sands (R., !); Syd.: Kvalbø (R., !); Vaagø: Sørvaag (R.), Midvaag (C. J., !).

Fr. end of August.

205. *Festuca ovina* L.

Very commonly distributed from the lowlands to the highest hills. Occurs only in the viviparous form.

† *F. pratensis* Huds.

Accidentally introduced at Thorshavn (!) and cultivated at Kirkebø (!) on Str.

206. *F. rubra* L.

Very common and in many forms; extends from the sea-shore up to the highest mountain tops (e. g. Øst.: Samfelle 720 m. (C. J.)); often occurs in considerable quantities on roofs.

Among the numerous forms may be named f. *arenaria* (Osb.), e. g. Sandø: downs at Sands (!).

Further a curious large form with flat leaves on the flowerless shoals occurs here and there on very luxuriant rock-ledges. I have referred it to var. *planifolia* Trautv. Plantæ Sibir. bor. p. 135, Acta Horti Petropolitani, V, 1877 (Syn. var. *planifolia* Hack., subvar. *villiflora* Hack. Monogr. Festuca, p. 140), the specimens being very much like the description. We collected specimens from Syd.: near Træraa; Vid.: Talus of debris at Enneberg (W.), but we noticed it at several other places.

Fl. July. Fr. August—September.

207. *Glyceria distans* (L.) Whbg.

Common partly in clefts in sea-cliffs and partly on the sandy sea-shore; varies considerably according to the circumstances under which it grows.

We met with it on all the islands.

Fl. beginning of July. Fr. August—September.

208. *G. fluitans* (L.) R. Br.

Rather common by smaller streams in enclosed fields round about inhabited places, but not met with far from houses.

Fl. July.

209. *G. maritima* (Huds.) Whbg.

Found together with *G. distans* in clefts and crevices of rocks by the shore.

Syd.: rather common, e. g. at Kvalbø (R., sub. nom. *G. distans*), head of Trangisvaagfjord (C. J., !), Skarvetange near Frodebø (!), Vaags Ejde on the west coast (!); otherwise only found on Str.: Højvig (!).

Simmons (1896, p. 75) reports it from Thorshavn, but his specimens belong to *G. distans*, a considerable amount of which we also noticed at the place mentioned by him.

210. *Holcus lanatus* L.

Common in enclosed fields, but rare beyond the enclosures and absent on the hills.

Fl. July.

211. *Holcus mollis* L.

As the preceding, especially abundant in recently cultivated fields.

Fl. July.

† *Hordeum vulgare* L.

Commonly cultivated.

† *Lolium multiflorum* Lam.

Cultivated at Thorshavn (R.).

† *L. perenne* L.

As the preceding (R.).

212. *Molinia coerulea* (L.) Moench.

Fairly common on moderately damp peaty soil; we met with it on Bordø, Kalsø, Kunø, Str., Vid. and Øst., but not on Fuglø, Svinø and Vaagø and Syd. — at the latter island it doubtless does not occur at all.

Generally it occurs only in low-lying regions, but we found some specimens on Vid.: Mornefjæld at about 450 m.

Fl. end of July and beginning of August. Fr.?

213. *Nardus stricta* L.

Commonly distributed outside enclosed fields and up in the hills (e. g. Kunø at about 650 m.), often as a social species.

† *Phleum pratense* L.

Cultivated at inhabited places; Str.: Thorshavn (R.) and Kirkebø (!); Syd.: Tværaa (!).

214. *Phragmites communis* Trin.

Syd.: on a rock-ledge at Frodebö (R.). Sterile.

215. *Poa alpina* L.

Rather common on the hills and often in low-lying regions in damp ravines. Always viviparous.

216. *P. annua* L.

Common in enclosed fields and near houses, and on inhabited sea-shores, but never far from houses.

217. *P. glauca* M. Vahl; *P. caesia* Sm.

Common on rock-ledges in low-lying regions and frequent on the hills.

218. *P. nemoralis* L. f. *glaucantha* Gaud.

Rather common on rock-ledges together with the preceding and sometimes not to be distinguished from it; does not, however, grow far up the hills.

219. *P. pratensis* L. var. *humilis* Ehrh.

Common in low-lying regions, often found in abundance on roofs of houses.

220. *P. trivialis* L.

Common in enclosures at inhabited places, especially in recently cultivated fields, but does not seem to spread beyond the enclosed land.

A form with pale yellow spikelets and altogether of a light colour (f. *pallida*!) occurred at Frodebö on Syd. mixed with normal, violet specimens.

221. *Psamma arenaria* (L.) R. & S.

Only found on the downs at Sands on Sandö (R., !).

Fl. end of July, no fr. end of August.

222. *Sieglingia decumbens* (L.) Bernh.; *Triodia* Beauv.

Rather common beyond enclosed fields on peaty soil, occurs doubtless on all the islands.

Fr. immature in the beginning of August.

† *Triticum vulgare* Vill. f. *aestiva* (L.).

Accidentally introduced; Str.; on heaps of coal at Vestmanhavn (R.); Vaagö: solitary plants on the sea-shore at Sandevaag (!).

Fl. end of August.

Order XLV. IRIDACEAE.

223. *Iris Pseudacorus* L.

Mentioned by Landt as occurring at Vaag on Syd., where we also found it widely dispersed in damp places in enclosed fields, but flowering

sparingly. It was also found over a limited area at some distance from Vaag on the southern side of the fjord; it is probably a detached piece of rhizome, which was carried there by the sea and took root, for it occurs just along the sea-margin.

Rostr. l. c., p. 59 mentions that from Vaag it was planted in several places, where, however, it does not flower; but we noticed it in flower at Næs on Öst. At some of the other places where we met with it — e. g. at Vaagö, Midvaag, and Ejde on Öst — it was as widely distributed in the enclosed fields as at Vaag, and did not convey the impression of having been planted; but it is just possible that it was introduced everywhere.

Fl. end of July; no fruit.

Order XLVI. JUNCACEAE.

224. *Juncus balticus* Willd.

Sandö: in sandy soil near the downs at Sands (R.,!).

Fr. end of August.

225. *J. biglumis* L.

Rather rare in bare gravelly places overrun by water on the hill-plateaux from about 2—300 m. upwards.

Bordö: Gjerdum Rejn, 400 m. (!); Sandö: Skorar (R.); Str.: Vardebakken (R.); Syd.: Præstefjæld and Kvalbøfjæld (R.,!); Vaagö: Rensatinder (R.); Öst.: Rejafjældstinde, 600 m. (!).

226. *J. bufonius* L.

Not uncommon near inhabited places in open, damp localities.

227. *J. conglomeratus* L.

Rather common in pools and bogs in low-lying regions.

228. *J. effusus* L.

As above, but more common.

229. *J. lampocarpus* Ehrh.

Common in peaty soil in low-lying districts.

230. *J. obtusiflorus* Ehrh.

Outside the enclosed land on Syd. between Ördevig and Punthavn in fairly large quantities.

Not yet in flower at the end of July.

231. *J. squarrosus* L.

Common on moors both in the lowlands and fairly high up on the hills.

Fl. July.

232. *J. supinus* Moench.; *J. bulbosus* L.

Common in peat-bogs in the lowlands. Sometimes (as *f. fluitans* Lge.) totally submerged in the lakes, e. g. Syd.: the lake in Kvanhauge; Öst.: Kornvatn near Næs (!).

233. *J. trifidus* L.

Fairly common on rock-ledges on the hills on most of the islands, but rarest on Sandö and Syd.

Fl. July. Fr. August—September.

234. *J. triglumis* L.

Common in similar localities as *J. biglumis*, but also found in low-lying regions in gravel carried down by streams. We noticed it on all the islands.

Fl. July.

235. *Luzula arcuata* (Whbg.) Sw.

Rare and only found on the highest hills on the northern islands. Bordö: Höjffjæld from 550 m. (!); Kalsö: Blankeskaalefjæld at some 650 m. (!); Kunö: hill-plateau at the southern end at some 650 m. (!); Vid.: Villingedalsfjæld at some 700 m. (!); Öst.: Slattaratinde, 800 m. (Simmons), Rejaffjældstinde, 765 m. (!).

Fr. August.

236. *L. campestris* (L.) D.C.

Occurs here and there outside the enclosed land in the lower districts, but often escapes notice.

Fl. May.

237. *L. multiflora* (Ehrh.) Lej.

Commonly distributed in low-lying regions, but sometimes at fairly high altitudes (Kleiven on Myggenæs, 550 m. (C. J.)).

Fl. May—June.

Landt mentions *L. pilosa*, but judging from Lyngbye's specimens he must mean *L. multiflora*.

238. *L. silvatica* (Huds.) Gaud.; *L. maxima* (Rchb.) D.C.

Common on rock-ledges and on grassy slopes in low-lying regions; sometimes fairly high up in the hills, but then not flowering.

A curiously slender and narrow-leaved form (*f. gracilis* Rostr. l. c., p. 61) was found by Rostrup on the top of Hestö; it has since been noticed in Shetland by Beeby (The Scottish Naturalist, 1887, p. 20).

Fl. from the beginning of May. Fr. August.

239. *L. spicata* (L.) D.C.

Very common both in the lowlands and on the highest hills (e. g. Öst.: summit of Samfelle, 720 m. (C. J.)).

Fl. May. Fr. July—August.

Order XLVII. JUNCAGINACEAE.

240. *Triglochin palustre* L.

Not uncommon in peaty soil in the lowlands.

Landt (p. 181) mentions *T. maritimum* as »not uncommon on the sea-shore«, but this must doubtless be a slip of the memory.

He also (p. 210) mentions *Lemna trisulca* L. as »growing everywhere in inhabited places, where there is stagnant and foul water«; I believe this to refer to *Callitriche stagnalis*.

Order XLVIII. LILIACEAE.

241. *Scilla verna* Huds.

Not uncommon on the southern part of Syd. at Sunnbö, Ögrum, Lobra and Vaag, and also near Punthavn at Trangisvaagfjord. I also found it in 1896 on Öst. at Svinaa on a slope near the sea.

It grows on fairly dry slopes by preference near the sea, but is recorded to have been found by Trevelyan at a height of some 100 m.

It is the first plant mentioned from the Færöes; it was found as early as 1771 and figured in Flora Danica tab. 568.

Fl. June (»before midsummer«, Landt); a few specimens in flower as late as middle of July. Fr. middle of August.

Order XLIX. ORCHIDACEAE.

242. *Habenaria albida* (L.) R. Br.; *Gymnadenia* Rich.

Only found on Öst.: Næs (L.), Næs Reuk (!), Solmunde (C. J.), Göte (W.), and on Kodlen at Ejde (Kissmeyer).

Fr. end of August.

243. *H. viridis* (L.) R. Br.; *Coeloglossum* Hartm.

Occurs on grassy hill-slopes both in low-lying regions and fairly high up in the hills, most frequently as small specimens.

Common in the northern part of Syd.; found also on Fuglö, Bordö, Nolsö (R.), Sandö, Str., Vaagö and Öst.

Fl. July. Fr. August—September.

244. *Listera cordata* (L.) R. Br.

Found on Syd. between Thorshavn and Höjvig (W.); mentioned by Horneman as found by Lyngbye.

On an excursion which we made in company with Prof. Warming, he found a few specimens without inflorescence.

245. *Malaxis paludosa* (L.) Sw.

Found on Sandö in a damp hollow near the rectory (C. J.); only a few small specimens were found; they were flowering on July 1st, but did not appear to bear fruit. (Jensen, Rejseberetn. p. 203).

246. *Orchis latifolius* L.; *O. majalis* Rehb.

Rather rare, occurs most frequently mixed with the below-mentioned species in damp fields.

Str.: Thorshavn and Kirkebø (R.); Syd.: Kvalbø (R.,!), Hove (R.); Öst.: Næs and Ejde (R.).

Rostrup (l. c. p. 59) reports it as having been gathered by Lyngbye on Myggenæs, but Lyngbye's specimens belong to the below-mentioned species.

Fl. July.

247. *O. maculatus* L.

Common and often in considerable quantities in damp enclosed fields and in the low ground beyond the enclosures; appears to be most frequent on Sandø and Syderø. Sometimes distributed some way up the hills, e. g. Bordø: Klakken (flower Aug. 7th.) at some 400 m.

Fl. beginning of July. Fr. end of August.

248. *O. masculus* L.

On Syd. on a damp rock-ledge above Tværaa (Hj. Jensen); mentioned by Trevelyan.

In flower April 24th. 1890.

We have further some doubtful records from Landt, Lyngbye and Martins of *O. morio*, *sambucinus* and *usulatus*. The latter is mentioned by Landt as occurring at Næs on Öst., but he evidently confounds it with the fruit-bearing specimens of *Habenaria albidula*.

Order L. POTAMOGETONACEAE.

249. *Potamogeton alpinus* Balb.; *P. rufescens* Schrad.

Öst.: in the large lake near Ejde (!); large well-developed specimens belonging to f. *longifolia* Tiselius (Potam. Succ. exsicc. N. 15).

As already mentioned (Ostenf. II, p. 12) the previous statement of this species (by Kurtz) is wrong.

Inflorescences, but no fruit at the end of August.

250. *P. filiformis* Pers.; *P. marinus* Auctt.

Only on Syd.: Lamba-ejde near Kvalvig (!), Kvalbø-Ejde and Norbes-Ejde (Simmons,!), stream near Kvalbø (R.,!), in the lake in Vaags Ejde (R.,!).

Fl. June—July.

251. *P. gramineus* L.

Sandø: Sandvatn (R.,!), Saltvigvatn (!); Syd.: in the lake in Kvalbø-ejde (!), in the lake in Vatnsdal (!); Öst.: Toftevatn (!).

Found in flower only in Vatnsdal in July; and with fruit only in Saltvigvatn at the end of August.

252. *P. gramineus* L. × *perfoliatus* L.; *P. nitens* Web.

Sandø: in Saltvigvatn and its tributary river in great abundance mixed with primitive typical species (!), a lake between Sands and Skopen(!).

Found with spikes, but ovaries barren.

253. *P. natans* L.

Occurs here and there in lakes and small streams (f. *fluvialtilis* Fr.).

Sandö: the lakes at Sands (C. J., !), lake between Sands and Skopen (!), lake at Skopen (!); Str.: stream near Højvig (!); Syd.: Kvalbö (R.); Vaagö: in Sörvaagsvatn (C. J.); Öst.: the lakes near Ejde (Simmons, !).

Rostrup very correctly pointed out (p. 62) that the *P. natans* mentioned by the older authors is not the above-mentioned species, but the universally distributed *P. polygonifolius*. He does not mention the true *P. natans* as occurring on the islands, though he gathered specimens of it at Kvalbö.

It bears spikes only at a few places (Ejde and Sandö) and at only one of these localities (Nigítjern at Sands) were specimens found bearing fruit sparingly, so it can hardly propagate itself by seed.

254. *P. perfoliatus* L.

Occurs here and there in lakes from a depth of about $1\frac{1}{2}$ m. Sandö: Sandsvatn (R., !), Saltvigsvatn (!), lake between Sands and Skopen (!); Syd.: lake in Norbesejde (R.), Vaagvatn (R., !), lake in Kvanhauge (!); Öst.: Toftevatn (!), the large lake near Ejde (!).

In flower only in Vaagvatn in the middle of July, and in fruit in Saltvigsvatn at the end of August.

255. *P. polygonifolius* Pourr.

Common everywhere in ditches and pools; extending from the lowland up to about 400 m. (Öst.: Bredaskard (C. J.)). Very variable.

Fl. June—July. Fruiting freely, August.

256. *P. praelongus* Wulf.

Syd.: in the lake in Vatnsdal (!); in the Herbarium of the Botanical Gardens, Copenhagen there are specimens from the Færöes gathered by Lyngbye.

It had no spikes in July.

257. *P. pusillus* L.

On Sandö, in Saltvigsvatn (!) and the lake between Sands and Skopen, both places in abundance at the depth of about 1 m.; Öst.: the large lake near Ejde(!). Occurs on soft sea-bottom, does not nearly reach the surface and consequently found without spikes.

Landt also mentions *P. lucens* and says that »it is generally eaten by geese.« This seems to indicate that it was fairly common, but as it has not been met with by later authors, he doubtless confused it with *P. perfoliatus* L.

258. *Ruppia maritima* L. f. *rostellata* (Koch).

Syd.: On the delta at the mouth of a smaller stream in the valley of Kvalbö (R., !).

Beginning to flower at the end of July.

259. *Zostera marina* L.

Syd.: Vaagfjord (Landt, !, Helgi Jonsson).

Landt (p. 210) writes »that it grows »in fiords where the water is calm, e. g. at Vaag on Syderö«. This must, however, be the only place

where it occurs on the islands, otherwise the algologists would have noticed it. We found some fresh, but sterile specimens driven ashore, but in December Helgi Jonsson found some specimens with spikes, whose fruits however, were not developed.

Order LI. SPARGANIACEAE.

260. *Sparganium affine* Schnitzl.; *S. natans*, Rostr. p. 62.

Not uncommon in small lakes on most of the islands visited by us; grows also some way up the hills, e. g. Bördö: Skaarene, at some 375 m. (!) and Str.: Vardebakken, at some 300 m. (!).

Fl. end of July. Fr. end of August.

It generally flowers, but as a rule bears fruit very sparingly; we found a greater number of spikes with fully developed fruit only at Sandö: the small lakes near Saltvigsvatn and Öst: the lake near Ejde.

III. Gymnospermae.

Order LII. PINACEAE.

261. *Juniperus communis* L. var. *nana* (Willd.) Loud.

Str.: Glyversrejn (R., Jone Isacsen); Vaagö: near Sörvaagsvatn (R.); Öst.: near Svinaa (!), and according to verbal information on Havnatinde on Svinö.

It has only been met with in these widely distant localities, but formerly it was more common; thus it is usually found in peat-bogs, fairly large stems often occurring. The fact of its perhaps having been used as fuel on these treeless islands may account for its present rarity.

Fr. (ripe) about September 1st.

IV. Pteridophyta.

Order LIII. EQUISETACEAE.

262. *Equisetum arvense* L.

Common in low-lying regions, but not in the hills. Occurs in numerous different forms; thus, large forms peculiar to shady places (f. *nemorosa* A. Br.) are found in ravines; robust forms peculiar to sunny places (f. *agrestis* Klinge), and small prostrate forms on stony margins of lakes; in high water the latter becomes a submerged form and has then second suberect branches, as, e. g., on Str.: in Leinumvatn.

Bearing spores in the beginning of May.

263. *E. heleocharis* Ehrh. f. *limosa* (L.).

Rather rare in lakes and larger streams; Str.: Kvalvig (R.), Kvivig (L.), in the stream at Örerenge (!); Syd.: Kvalbö (R.), in ditches at Famien (!), Porkere (R.), in the lake in Vaags Ejde (Simmons, !).

It is doubtless this species which Landt calls *E. hyemale*, as is also mentioned by Lyngbye on his labels.

264. *E. palustre* L.

Common on damp ground in low-lying regions. A form parallel to the submerged form mentioned under *E. arvense* was found by us on Syd.: in the lake in Vaags Ejde.

Bearing spores in May.

265. *E. pratense* Ehrh.

Rare, but possibly sometimes overlooked; Kalsö: Mygledal (Lomholt), Syderdal (!); Kunö: southern end of the island at some 100 m. (!); Str.: Vestmanhavn (Kissmeyer); Syd.: Tværaa (!).

Bearing spores in May.

266. *E. silvaticum* L.

Common both in luxuriant ravines and in fields, where it often occurs in large quantities; not met with higher up the hills.

Bears spores probably at the same time as above.

Milde (Filices Europaeae, p. 238) mentions *E. ramosissimum* Desf. from the Færöes; specimens are said to be found in Hooker's Herbarium. But as it has not been found since, it is just possible, either that the labels have been changed or that some other similar mistake has occurred; in the past sufficient care was often not bestowed on details such as these.

Order LIV. HYMENOPHYLLACEAE.

267. *Hymenophyllum peltatum* (Poir.) Desv.; *H. Wilsoni* Hook; Rostr. l. c. p. 70.

Seems to be fairly common on the larger islands; grows by preference in talus of débris forming below terraces of basalt-rocks together with mosses, but sometimes also in the lower part of the basalt terraces, in ravines and on detached pieces of rocks.

We found it in many places on Syd., Str., Sandö and Öst., but on the Nordreöer we only met with it on Bordö: Klaksvig and Kalsö: Syderdal, though we looked out for it particularly.

It does not spread higher up the hills than 2—300 m. (C. J., !).

Seems to be found with sporangiums the whole summer.

Order LV. ISOETACEAE.

268. *Isoetes echinosporum* Dur.

Common in the numerous small lakes together with the following species, but not found on Syd. (and Vaagö?).

269. *I. lacustre* L.

Common in the lakes on all the islands visited by us. Strangely enough, earlier authors mention this two species only as occurring in a few lakes, while we found them in every lake we investigated.

They grow from the shore out into the water to a depth of at least 1½ m., and the specimens increase in size with the depth: thus the leaves of *I. echinosporum* from Saltvigsvatn measured 15 cm., and the leaves of *I. lacustre* from a small lake at Næs 20 cm.

Both of them grow in small mountain-pools fairly high up in the hills, e. g. *L. echinosporum* on Bordø: Skaarene, 375 m. and *L. lacustre* on Str.: Vardebakken 300 m. and Syd.: Riskjetjern between Famien and Vaag, 300 m.

Order LVI. LYCOPODIACEAE.

270. *Lycopodium alpinum* L.

Common on heathy ground from the shore-line up to the hill-plateaux, where it is invariably to be found in *Grimmia*-heaths; perhaps less frequently in the lowest regions.

271. *L. annotinum* L.

Öst.: ravine at Troaa near Svinaa (!).

Landt's statements of *L. clavatum* and *L. complanatum* are doubtless due to his having confused them with *L. alpinum*. He mentions that *L. complanatum* and *alpinum* are used by the inhabitants as a yellow dye, and says (p. 218) that *L. alpinum* occurs in it (i. e. *L. complanatum*) as they (i. e. the inhabitants) take them both to be one and the same plant as they were indeed quite justified in doing.

272. *L. Selago* L., f. *appressa* Desv.

Rather common together with *L. alpinum*, but seldom occurs in large quantities; it is to be found both in the lowlands and up in the highest hills, e. g. Kalsø: Blankeskaalefjæld at some 700 m.

Order LVII. OPHIOGLOSSACEAE.

273. *Botrychium Lunaria* (L.) Sw.

Rather common on grassy, fairly dry slopes; we noticed it on all the islands visited by us, but only a few specimens occurred at each place. It grows fairly high up the hills, e. g. Viderø: Mornefjæld, 500 m., but not on the higher hill-plateaux.

Order LVIII. POLYPODIACEAE.

274. *Aspidium Dryopteris* (L.) Baumg.

Rare; Str.: Glyversrejn (R., C. J.), Vardebakken near Thorshavn, small specimens were met with in a crevice in an isolated rock (!).

275. *A. Filix mas* (L.) Sw.

Found here and there in clefts of rock, ravines and on talus of débris gathering; noticed on all the islands which have been visited, but only in low-lying districts.

276. *A. Lonchitis* (L.) Sw.

Rare; Kunø: on rock-ledges above the village of Kunø at some 350 m. (!); Str.: ravine near Gjanøre (!); Vid.: near Kvannesund (Miss Matras).

277. *A. Phegopteris* (L.) Baumg.

Str. Kirkebøfjæld and Glyversrejn (R.), talus of débris gathering near Nordredal (C. J.), ravine near Vestmanhavn (C. J.); Vaagø: Thorman-

Ravine (C. J.); Vid.: Mornefjæld at some 450 m. (!); Öst.: ravine near Selletræ (!).

278. **A. spinulosum** (Müll.) Sw., subsp. **dilatatum** (Hoffm.) Sw.

Found here and there in similar places to *A. Filix mas*; noticed on all the islands which have been visited, but only in low-lying districts.

All the specimens investigated belong to the subspecies *dilatatum*, and I do not think that the main species occurs in the Færøes.

279. **Asplenium Adiantum nigrum** L. *α*, **nigrum** Heubl.

A few specimens only found on Öst.: clefts of rock on Östnæs (Næs-Reuk) (!).

280. **A. Trichomanes** L.

Found together with the above, and in the same way a few specimens only. Landt reports it from this locality, but it was not re-discovered before in 1897.

281. **Athyrium Filix foemina** (L.) Roth.

Found here and there in similar places to *Asp. Filix mas* and like the latter only in the lower districts.

282. **Blechnum Spicant** (L.) With.

Common on all the islands mostly on slopes and rock-ledges. It grows at high altitudes, but not on the highest hill-plateaux; we noticed it up to some 600 m. (Kunö).

The specimens occurring on the hills and on dry slopes are small and have imbricated pinnæ on the barren fronds (f. *imbricata* Rostr. p. 71); the robust forms from rock-ledges and ravines are a contrast to it; they sometimes attain to a length of about 70 cm.

As previously mentioned (Ostenf. II p. 17) specimens are found with fronds in a transitional state between fertile and barren fronds.

283. **Cystopteris fragilis** (L.) Brnh.

Common in clefts of rock and in similar shady places on all the islands in low-lying regions as well as at high altitudes.

284. **Polypodium vulgare** L.

Found here and there on rocky ledges and on isolated rocks, but not at high altitudes. Specimens mostly small.

Pteridium aquilinum is reported by Melvill, but it is doubtless a confusion with Shetland, where it grows. Horneman's statement of *Allosorus crispus* is equally improbable.

Order LIX. SELAGINELLACEAE.

285. **Selaginella selaginoides** (L.) Link.

Common everywhere in not too wet localities both in the lower districts and on the hill-plateaux.

PHYTO-GEOGRAPHICAL STUDIES

BASED UPON OBSERVATIONS OF

»PHANEROGAME AND PTERIOPHYTA«

BY

G. H. OSTENFELD.

THE phanerogams and vascular cryptogams of the Færöes, as may be seen in the preceding treatise on the flora, comprise 277¹ species whose introduction we have no reason to attribute to human agency; and further, 40 species which were doubtless either accidentally or intentionally introduced by man. With the exception of the latter, all the species of phanerogams and vascular cryptogams together with a few hybrids and varieties are enumerated in the accompanying list.

The letter *c* after the name of the species denotes that it is commonly distributed on all the islands; the others are less frequent or rare and only met with on some of the islands.

The species marked ⁰ are not found in Iceland, those marked † not in Scandinavia and those marked * not in Great Britain. Further the »Atlantic« species are printed in small capitals, the »Arctic« species in italics and the »Temperate European« in ordinary types.

Floristic differences within the group of Islands. Though the Færöes are small and not far distant from each other, yet floristic differences may be traced in the different parts of the group. The common species are naturally met with on all the islands, so we must turn, to find the differences, to those which only occur in a few places. The natural grouping of the islands according to their floristic peculiarities nearly coincides with their geographical situation; thus all the northern islands (Nordreörne, Österö, Strömö and Vaagö) form a northern section and the southern (Sandö and Syderö) a southern section. I, however, prefer to make

¹ In this treatise the number is brought up to 285 as several of the hybrids have been numbered.

LIST OF THE SPONTANEOUS SPECIES OF THE VASCULAR CRYPTO-
GAMS AND PHANEROGAMS OF THE FÆRØES.

I. Cryptogamæ vasculares.

Aspidium Dryopteris.
— Filix mas. c
— *Lonchitis*.
— Phegopteris.
— spinulosum* dilatatum. c
° Asplenium adiantum nigrum.
— Trichomanes.
Athyrium Filix foemina. c
Blechnum spicant. c
Botrychium Lunaria. c
Cystopteris fragilis. c
Equisetum arvense. c
— heleocharis.
— palustre. c
— pratense.
° — silvaticum. c
° Hymenophyllum peltatum. c
Isoetes echinosporum. c
— lacustre. c
Lycopodium alpinum. c.
— annotinum.
Lycopodium Selago. c
Polypodium vulgare.
Selaginella selaginoides. c

II. Gymnospermæ.

Juniperus communis, v. nana.

III. Monocotyledones.

° Agropyrum junceum.
° — junceum × repens.
— repens. c
Agrostis stolonifera. c
— canina × vulgaris.
— canina. c
— vulgaris. c
Aisa caespitosa. c
— — v. alpina. c
— flexuosa. c.
° Airoopsis præcox.
Alopecurus geniculatus. c
Anthoxanthum odoratum. c
Carex atrata.
° — binervis. c
° — caespitosa × Goodenoughii.
*† — *cryptocarpa*.

Carex dioica. c
— echinata. c
— flacca. c
° — flava. c
° — flava × fulva.
° — fulva.
— Goodenoughii. c
— incurva.
° — leporina.
— panicea. c
— pilulifera. c
° — pulicaris. c
— saxatilis (pulla).
— rigida.
— salina *kattegatensis.
Catabrosa aquatica.
° Digraphis arundinacea. c
Elymus arenarius. c
Eriophorum polystachyum. c
° — vaginatum.
Festuca ovina, f. vivipara. c
— rubra. c
Glyceria distans. c
— fluitans.
— maritima.
Habenaria albida.
— viridis.
° *Heleocharis multicaulis*.
— palustris.
— uniglumis.
° *Holcus lanatus*. c
° — mollis. c
° *Iris Pseudacorus*.
Juncus balticus.
— biglumis.
— bufonius. c
° — conglomeratus. c
° — effusus. c
— lampocarpus. c
° — obtusiflorus.
— squarrosus. c
— supinus. c
— trifidus.
— triglumis.
Listera cordata.
Luzula arcuata.
— campestris.

Luzula multiflora. c
⁰ — *silvatica.* c
 — *spicata.* c
⁰ *Malaxis paludosa.*
Molinia coerulea. c
Nardus stricta. c
⁰ *Narthecium ossifragum.* c
Orchis latifolius.
 — *maculatus.* c
⁰ — *masculus.*
⁰ *Phragmites communis.*
Poa alpina. c
 — *annua.* c
 — *glauca.* c
 — *nemoralis.*
 — *pratensis.* c
 — *trivialis.* c
Polamogeton alpinus.
 — *filiformis.*
 — *gramineus.*
 — *gramineus* × *perfoliatus.*
 — *natus.*
 — *perfoliatus.*
⁰ — *polygonifolius.* c
⁰ — *praelongus.*
 — *pusillus.*
⁰ *Psamma arcuaria.*
⁰ *Ruppia maritima.*
⁰ *Scilla verna.*
Scirpus cespitosus. c
 — *pauciflorus.*
⁰ *Sieglingia decumbens.* c
Sparganium affine. c
Triglochin palustre. c
Zostera marina.

IV. Dicotyledones; Choripetalæ.

Alchemilla alpina. c
^{*†} — *faeroensis.* c
^{*} — *filicaulis.* c
^{*} — *Wichuræ.* c
Alsine verna.
Angelica silvestris. c
Arabis petraea. c
^{*} *Archangelica officinalis.*
Atriplex hastata.
 — *Babingtonii.*
 — *patula.*
Cakile maritima.
Callitriche autumnalis.

Callitriche hamulata. c
 — *stagnalis.* c
Caltha palustris. c
Capsella bursa pastoris. c
Cardamine hirsuta. c
 — *pratensis.*
Cerastium alpinum.
 — *Edmondstonii.* c
⁰ — *tetrandum.* c
 — *trigynum.*
 — *glomeratum.*
 — *vulgare.* c
Chamænerium angustifolium.
Cochlearia officinalis. c
Cornus succica. c
Draba hirta.
 — *incana.* c
Drosera rotundifolia.
Dryas octopetala.
Empetrum nigrum. c
Epilobium alsinifolium. c
 — *anagallidifolium.*
^{*} — *lactiflorum.* c
⁰ — *montanum.*
 — *palustre.* c
Geranium silvaticum. c
Geum rivale.
Honckenya peploides. c
Haloscias scoticum.
⁰ *Hypericum pulchrum.* c
⁰ — *quadrangulum.*
^{*} *Koenigia islandica.* c
Lathyrus pratensis.
Linum catharticum. c
Lotus corniculatus.
Lychnis Flos cuculi. c
⁰ *Melandrium rubrum.*
Montia rivularis. c
Myriophyllum alterniflorum. c
Oxyria digyna. c
^{*} *Papaver radiculatum.*
⁰ *Polygala serpyllacea.* c
⁰ — *vulgaris* v. *Ballii.* c
Polygonum amphibium.
 — *aviculare.* c
 — *viviparum.* c.
Potentilla anserina. c
 — *palustris.*
⁰ — *erecta.* c
 — *verna* (*maculata*).

Ranunculus acer. c
 0 — *Flammula.* c
 — — v. *reptans.*
 * — *glacialis.*
 — — *repens.* c
 0 *Rosa mollis.*
Rubus saxatilis c
Rumex acetosa. c
 — *crispus.*
 — *domesticus.*
 0 — *domesticus* × *obtusifolius.*
 0 — *obtusifolius.* c
Sagina nivalis.
 — *procumbens.* c
 — *procumbens* × *subulata.*
 — *subulata.* c
Salix glauca.
 — *phylicifolia.*
 — *herbacea.* c
Saxifraga decipiens. c
 — *hypnoides.* c
 — *nivalis.*
 — *oppositifolia.* c
 — *rivularis.*
 — *stellaris.* c
Sedum Rhodiola. c
 — *villosum.* c
Sibbaldia procumbens.
Silene acaulis. c
Spergula arvensis.
Spiraea ulmaria. c
Stellaria media. c
 — *uliginosa.* c
Subularia aquatica.
Thalictrum alpinum. c
Trifolium repens. c
Urtica dioica.
Vicia Cracca.
Viola palustris. c
 — *Riviniana.* c
 — *tricolor* * *genuina.*

V. Dicotyledones; Sympetalæ.

Achillea Millefolium. c
 — *Ptarmica.*
Alectorolophus minor. c
 — — *groenlandicus.*
 0† *Anagallis tenella.*
Armeria elongata * *maritima.* c
Bellis perennis. c

Brunella vulgaris. c
Calluna vulgaris. c
Campanula rotundifolia.
 0 *Cirsium palustre.*
 0 *Erica cinerea.* c
 0† *Euphrasia borealis.* c
 — — *curta.*
 0† — *atropurpurea.* c
 0 — *gracilis.*
 — — *latifolia.*
 0† — *scotica.* c
Galeopsis Tetrahit. c
 0 *Galium palustre.*
 0 — *saxatile.* c
Gentiana campestris * *islandica.* c
Gnaphalium supinum.
Leontodon autumnale. c
 0 *Litorella lacustris.* c
Lobelia Dortmanna.
Loiseleuria procumbens.
 0 *Lysimachia nemorum.*
Matricaria inodora, v. phaecephala. c
 0 *Mentha aquatica.*
Menyanthes trifoliata.
Mertensia maritima.
Myosotis arvensis. c
 0 — *palustris, v. strigulosa.*
 0† — *repens.*
 — *versicolor.* c
Pedicularis palustris. c
Pinguicula vulgaris. c
 0 *Plantago coronopus.*
 — — *lanceolata.* c
 — — *maritima.* c
 0 *Primula acaulis.*
Pyrola minor.
Senecio vulgaris.
Succisa pratensis. c
Tanacetum vulgare.
 * *Taraxacum croceum.* c
 — — *vulgare.*
Thymus Serpyllum. c
Tussilago Farfara.
Vaccinium Myrtillus.
 — — *uliginosum.*
 — — *vitis idaea.*
Veronica alpina.
 — — *Beccabunga.*
 — — *officinalis.* c
 — — *serpyllifolia.* c

the division by drawing a line from *Toftevatn* on *South-Österö* to *Sydredal* on *Strömö* and from thence to *Sörvaagsvatn* on *Vaagö*, thereby cutting off the southern end of these three islands and including them in the southern section. My reason for this is, partly that these parts being low and having a more rounded form correspond more closely to *Sandö* and *Syderö* than to the northern parts of *Strömö*, *Österö* and *Vaagö*; partly that several of the species which occur on the southern islands have been proved to extend to these parts, but not farther north.

The mountains of the northern section are on an average higher and more precipitous (Fig. 6) and the intervening areas of low-lying lands are fewer, so that hill plants (*Arctic*¹) are naturally far more common here than in the southern section. The most important of these species which characterize the northern section, but are absent (or rarely found*) in the southern section, are the following: —

<i>Campanula rotundifolia</i> .	<i>Dryas octopetala</i> .
<i>Gnaphalium supinum</i> , rc. ²	<i>Potentilla verna</i> .
* <i>Loiseleuria procumbens</i> , rc.	<i>Sibbaldia procumbens</i> , rc.
<i>Euphrasia latifolia</i> .	<i>Saxifraga rivularis</i> , rc.
<i>Veronica alpina</i> .	<i>Salix glauca</i> .
<i>Pyrola minor</i> .	<i>Luzula arcuata</i> , rc.
<i>Cerastium alpinum</i> .	<i>Carex atrata</i> .
— <i>trigynum</i> .	* — <i>rigida</i> , rc.
<i>Sagina nivalis</i> , rc.	* — <i>saxatilis</i> , rc.
<i>Ranunculus glacialis</i> , rc.	<i>Aspidium Lonchitis</i> .
<i>Papaver radicum</i> .	

All the above-mentioned 21 species are hill plants (*Campanula rotundifolia* — at least on *Bordö* — and *Pyrola minor* also appear here as hill plants) and those marked rc are fairly common in the high lands. Besides these hill plants, several lowland plants (*Temperate European* and *Atlantic*) have been found in the northern section, near *Ejde* on *Österö* and thence along *Sundelaget*, which either have not been found in other places on the islands — such as *Myosotis palustris* and *Galium palustre* — or are more common in the southern section — as *Scilla verna*, *Chamanerium angustifolium*, *Potamogeton natans* and *pusillus* as well as *Iris Pseudacorus*. This is doubtless

¹ For the definition of the terms »*Arctic*«, »*Temperate European*«, »*Atlantic*« see below p. 110.

² rc = rather common.

because the localities in the middle of the group of islands are more sheltered from the winds.

Unlike the northern section, the southern section contains many more temperate European and Atlantic forms, but this section is not quite so homogeneous in all its parts, Syderö in particular occupying a special, extreme position. The following plants have been met with only in the southern section: —

Asplenium Adiantum nigrum, Öst.

— *Trichomanes*, Öst.

Anagallis tenella, Öst., Vaagö.

Viola tricolor, Str., Sandö.

Rumex crispus, Str., Sandö, Syd.

Archillea Plarmica, Str., Syd.

Lathyrus pratensis, Str., Öst., Vaagö, Sandö, Syd.

Potamogeton natans, Str., Öst., Vaagö, Sandö, Syd.

Lobelia Dortmanna, Sandö.

Primula acaulis, Sandö.

Malaxis paludosa, Sandö.

Potamogeton gramineus × *perfoliatus* (*P. nitens*), Sandö.

Psamma arenaria, Sandö.

Agropyrum junceum, Sandö, Syd.

Drosera rotundifolia, Sandö, Syd.

Polygonum amphibium, Sandö, Syd.

Myosotis repens, Syd. (rc.).

Plantago coronopus, Syd.

Heleocharis multicaulis, Syd.

Juncus obtusiflorus, Syd.

Catabrosa aqualica, Syd.

Zostera marina, Syd.

Ruppia maritima, Syd.

Potamogeton filiformis, Syd.

— *prælongus*, Syd.

Orchis mascula, Syd.

Alsine verna, Syd.

Scilla verna, Syd. (rc.), at one place on Öst., see above.

As may be seen from this list, in which the name of the island or islands where the species occur is given immediately after that of each species, some are found distributed over the southern parts of Strömö, Vaagö and Østerö, as well as over Sandö and Syderö, others are peculiar to Sandö, others, again, to Syderö and lastly

some are common to both Sandö and Syderö. They are almost exclusively *Temperate European* or *Atlantic* species, though *Alsine verna*, which has been found on a single hill on Syderö, but has otherwise not been met with in the Færöes, may be regarded as Arctic. The most decidedly Atlantic species are *Anagallis tenella*, *Scilla verna* and *Myosotis repens*, the two latter are fairly common (re.) on Syderö.

It is characteristic of several of these Temperate European and Atlantic species that they do not bear fruit — a circumstance which may often be noticed when a species is found at the northern extremity of its area of distribution (Nathorst¹, Gunnar Anderson² and O. Ekstam³ have remarked it in the case of the flowering plants of Spitsbergen and Novaya Zemlya). Of the species mentioned in the above list the following only have been found without fruit: *Primula acaulis*, *Malaxis*, *Potamogeton prælongus* and *pusillus*, *Psamma*, *Agropyrum junceum*, *Lathyrus pratensis*, *Polygonum amphibium*, *Ruppia* and *Zostera*(?).

When, as is hereby proved, there really exists such a difference between the species met with in the northern and southern section, there must be reasons to account for this floristic diversity. The most obvious lies in the fact that the northern section is more decidedly hilly with only a few low-lying regions, and this cause will doubt less prove to be of great importance. While I do not consider that we are justified in pointing either to its geographical position to northwards or to its climate as an argument, the distances and differences being so small. As another factor may be mentioned the circumstances attending their immigration, and here I allude more particularly to the fact that the southern section owing to its position must be first reached by the winds (and the migrating birds?) coming from the south, and the northern section by the winds (and the migrating birds?) coming from the north and this suggests a possibility of the conveyance of the seed of the northern and southern plants respectively. Further information on this point will be found is given in the following notes on the importance of the winds and the migratory birds with regard to the immigration of the chief part of the flora (p. 117).

¹ A. G. Nathorst: Nya bidrag til kannedomen om Spetsbergens kärlväxter, p. 64 (Kongl. Svenska Vetensk. Akad. Handl. Bd. 20. N. 6. 1883).

² Gunnar Andersson: Om växtlifvet i de arktiska trakterna. Nordisk Tidskrift. H. 3, 1900, p. 249.

³ O. Ekstam: Blütenbiologische Beobachtungen af Novaja Semlja (Tromsø Museums Aarskrifter. 18. 1897).

Idem: Einige blütenbiologische Beobachtungen auf Spitzbergen. (Ibid., 20. 1898).

The Færøese Flora compared with that of the surrounding countries. We should a priori assume that the Færøese species would be found also in the surrounding countries and this is in fact the case; none of the phanerogams or vascular cryptogams are endemic to the Færøes. Moreover it is only a few of the species which occur in the Færøes that are not to be found in all the surrounding countries, — a natural consequence of the Færøes covering a small area, while the countries with which they must be compared in character are larger, for they can properly speaking only be compared with the British Isles, Scandinavia and Iceland. It has been proved that only 10 (7) of the species found in the Færøes are wanting in Great Britain, viz: —

<i>Ranunculus glacialis.</i>	<i>Carex cryptocarpa.</i>
<i>Papaver radicum.</i>	<i>Alchimilla faeroënsis.</i>
<i>Archangelica officinalis.</i>	— <i>Wichuræ.</i>
<i>Koenigia islandica.</i>	<i>Epilobium lactiflorum.</i>
<i>Salix glauca.</i>	<i>Taraxacum croceum.</i>

Of these the three last are critical species which may probably be found in the Scottish Highlands, so that it is safer to reduce the number to 7. It must, however, be remembered that comparisons such as these do not give an altogether complete account of the vegetation, for many of the species being common in the one country and very rare in the other are not mentioned at all. This is precisely the case here, as many of the Arctic species which are common all over the Færøes, e. g. *Saxifraga stellaris*, *Cerastium Edmondstonii*, etc. are very rare in Great Britain and have only been found on mountain heights. But viewed merely from the standpoint of geographical distribution such comparisons are of interest.

The part of Great Britain which lies nearest to the Færøes is Shetland and as this group of islands has been thoroughly investigated with regard to its flora it is worth while comparing it with the Færøes. According to the latest records¹, some 375 species

¹ See W. H. Beeby: On the flora of Shetland. (The Scottish Naturalist 1887 p. 20, 1888 p. 209, 1889 p. 32, 1890 p. 212, 1891 p. 251; and Annals of Scottish Natural History 1892).

Th. Edmondston: A Flora of Shetland, comprehending a list of the flowering and cryptogamic plants of the Shetland Islands. Aberdeen 1845.

Ralph Tate: Upon the Flora of the Shetland. (Journ. of Botany. 1866. p. 2).

A. Craig-Christie: Notes of a Botanical excursion to Shetland in 1868. (Transact. Bot. Soc. of Edinburgh, vol. X, 1870, p. 165 and p. 254).

are to be found in Shetland (including those introduced by human agency), to 317 in the Færøes. Of these, nearly 265 are common to both group of islands, 50 are peculiar to the Færøes and 110 to Shetland. Thus we see that a large number of species which are wanting in the Færøes have been found in Shetland and vice versa, while almost all occur in Great Britain.

The reasons for these differences must be sought in the following circumstances: — 1) The different geological structure and consequently configuration, the mountains of the Færøes being far higher than those of Shetland; 2) the much larger cultivated area on Shetland; and 3) its somewhat more southern position. The lists also show that the 110 species which are absent in the Færøes are chiefly lowland plants and mostly plants which follow in the wake of civilisation, while the 50 peculiar to the Færøes are Arctic plants; as an example I may mention that the Færøes have 5 species of the genus *Saxifraga* and Shetland but 1 which has, moreover, only been found in a few places.

Similar differences are detected when we compare the Færøes with another group of islands north of Scotland — the Orkney Isles; according to the latest records¹, about 450 species are to be found on them, and of these some 150 or 200 are absent in the Færøes.

Turning to Scandinavia we find circumstances almost similar to those of Great Britain. Only 7 species which are to be found in the Færøes, are absent from Scandinavia, and of these, three are species of *Euphrasia* which may on subsequent investigation be found in West Norway. The species are the following: —

Euphrasia atropurpurea.

— *borealis.*

— *scotica.*

Myosotis repens.

Anagallis tenella.

Alchimilla færoënsis.

Carex cryptocarpa.

While the 7 (10) species which are absent in Great Britain are typical Arctic species the 5 here mentioned are Atlantic, only *Alchimilla* and *Carex* being Arctic. The Atlantic species must be sought for on the west coast of Norway where there is a fairly

¹ See H. C. Watson: *Florula Orcadensis*. A list of Plants reported to occur in the Orkney Isles (*Journ. of Botany* 1864, p. 11).

W. J. Fortescue: A new list of the flowering plants and ferns of Orkney (*The Scottish Naturalist* 1882, pp. 318 and 362, 1883, pp. 20, 72 and 110).

large colony of them (e. g., *Meum athamanticum*, *Asplenium marinum*, *Scilla verna*, *Hymenophyllum peltatum*) a greater part of which are also to be found in the Færøes. This western part of Norway corresponds most closely to the Færøes. Thus Ove Dahl¹ tells us in his papers on the districts of Nord- and Søndfjord that only 27 of the Færøese species are wanting there (excepting the critical genera).

The two larger countries with which we have been comparing the Færøes, contain then almost all the plants which are to be found on the islands. The conformity is almost surprising and *proves that the Færøes are very closely related to them* in the matter of phyto-geography. It is otherwise with regard to Iceland, with which country we are generally most disposed to connect the Færøes both on account of its situation and of the identity of geological configuration. In the list of the vascular plants of the Færøes (p. 101—103) those species which are not found in Iceland are marked ° and they comprise no less than 61 of the 277 spontaneous species of the Færøes — i. e. about $\frac{1}{4}$ ($\frac{2}{3}$) of the flora, and a great many of the species are so common that they form the dominant feature of the vegetation, e. g. *Narthecium*, *Potentilla erecta*, *Holcus*- and *Carex*-species, *Potamogeton polygonifolius*, *Luzula silvatica*, *Polygala serpyllacea*, *Erica cinerea*. They belong almost exclusively to the temperate European and Atlantic forms, which consequently do not grow so far north as Iceland; but strangely enough on the other side Iceland contains several Temperate European species which are wanting in the Færøes (I think no less than some 30) and which must either have become extinct in the Færøes or have been introduced more directly into Iceland.

The resemblance between the Færøes and Iceland is then not so close as might be expected, but on the other hand that there exists some sort of connection between them is proved by the peculiar distribution of a few species: *Alchimilla færoënsis*, which has only been found in East-Iceland and in the Færøes (common in both places), and *Carex cryptocarpa* distributed over the Færøes, Iceland (common), South-Greenland and further across North-America to Kamskatka.

In the earlier botanical literature, e. g. »Færøernes Flora« by Rostrup (1870), we find shorter comparisons such as I have given above, but Rostrup's figures and mine do not quite agree, chiefly because the flora of the countries in question had not at that time

¹ See list of works at foot of p. 111.

been thoroughly investigated. Chr. Martins has also written a paper on this question (cfr. p. 2), but though it is valuable as one of the earliest attempts towards a study of phyto-geography, it must be owned that his conclusions do not hold good, owing to the fact that the material he had at his disposal was very imperfect and erroneous; as an example may be mentioned that he records (l. c. p. 424) 31 species as found in the Færøes, but absent in Shetland and Iceland, while more recent investigations failed to trace no less than 20 of these species in the Færøes, showing that his statements must have been based upon mistakes, and of the remaining 11, 10 have now been found in Iceland, leaving only one species concerning which his record is correct. It is easy to understand that such premises (and he had no better at his command) may lead to strange conclusions, as e. g. that the flora of the Færøes has migrated partly from America and partly from Europe («ces îles ont été peuplées conjointement par l'Europe et par l'Amerique», p. 435), though Martins is of opinion that the greater part is from Europe («la migration européenne est évidemment prédominante», p. 440). Of the theories maintained by him one holds good to our day, viz. that the Flora of the Færøes is due to immigration, and that the species have not developed on the spot.

The Floristic components and the place occupied by the Færøese Flora in Phyto-Geography. The flora of all the northern countries is generally supposed to be made up of species of different origin and to have migrated at different times and in different ways. A. Blytt¹ has propounded this theory with regard to Norway in several papers, and later on it has been further worked out by others. In Great Britain the matter has not received much attention since the days of Forbes and Watson, so that at the present time we have no up-to-date investigations for this country.

In the preceding pages I have several times used the terms »Arctic«, »Temperate European« and »Atlantic« and these terms answer broadly to Blytt's »Arctic«, »Subarctic« and »Atlantic«. I apply the term Arctic to *those species which in the present day are chiefly met with in the Arctic regions, in the mountains of Scandinavia the*

¹ A. Blytt: Essay on the immigration of the Norwegian Flora. Christiania 1876.

Idem: Die Theorie der wechselnden kontinentalen und insularen Klimate. (Engler's Botanische Jahrbücher. Bd. 2. 1882).

Idem: On the distribution of plants (Journ. of Botany, 1887).

higher mountains of Great Britain and also in the higher regions of the Alps and of the other Central-European mountains. By Temperate European I understand the species which are now dispersed over the southern and low-lying parts of Scandinavia, and from the Baltic to the Alps. Lastly, the term Atlantic embraces the species which extend along the western coast of Europe, i. e. from western Norway to the Pyrenean Peninsula. In the list of the Færøese species given at pp. 101—103 the names of the Atlantic species are printed in small capitals, those of the Arctic species in italics, and those of the temperate European species in ordinary types.

The flora consists of these three floristic components. It is not always easy to decide in which category each species should be placed, and it must after all be a matter of judgement. I have, however, chiefly followed the opinion expressed by O. Dahl¹ — Blytt's successor in studies of plant distribution in Norway — in his different phyto-geographical papers and I have arrived at the conclusion that of the 277 spontaneous species of the Færøes, 70 are Arctic, 164 Temperate European and 43 Atlantic. That is, more than one half ($\frac{7}{12}$) are Temperate European and widely-spread species, while the Arctic element constitutes about $\frac{1}{4}$ and the Atlantic about $\frac{1}{6}$. If we compare them with the other northern countries, making allowances for their isolated situation so far to the north-west, we find that the former are unusually rich ($\frac{3}{4}$) in Temperate European and Atlantic species. The large quantity of Temperate European species show that the flora must be regarded as belonging to the woody districts of Temperate Europe, though trees are quite absent, while the relatively considerable Atlantic element indicates that, among these woody districts it is most closely related to the northern part of Great Britain. The Færøes are not mentioned in Drude's² book on phyto-geography, but he remarks in it (p. 370) that in south-western Norway, species from mountain regions meet with Atlantic species, while with this exception these two classes are separated by the Scandinavian woody region (the pine region). This is also the case in the Færøes, and

¹ O. Dahl: *Plantegeografiske Undersøgelser i det indre af Romsdalsamt med de tilstødende fjeldtrakter. I—II.* (Det kongl. norske Vidensk. Selsk. skrifter 1893—94, Trondhjem). *Plantegeografiske undersøgelser i ydre Søndmore.* 1894 (Christiania Videnskab Selskabs Forhandlinger 1895). *Kystvegetationen i Romsdal, Nord- og Søndfjord.* 1896 (Ibidem. 1897). *Botaniske undersøgelser i Søndfjords og Nordfjords Distrikter* i 1896—97. (Ibidem. 1898).

² O. Drude: *Handbuch der Pflanzengeographie.* Stuttgart, 1890.

I am of opinion that we may justly regard the Færøes as a *woodless north-western extremity of the Atlantic part of the woody region of the West Baltic area* and not as a woodless extremity of the Scandinavian woody region. *This is, however, the case only with the low-lying districts, for the hilly parts must be reckoned to belong to the alpine (arctic) region*, as in the similar instance of the Scottish Highlands. What I want to emphasize is, that *the Færøes cannot be classed with Iceland*, the latter country is regarded by Engler¹ and Strömfelt² as a woodless part of the Scandinavian woody region, by Grisebach³ as Arctic, and by Drude⁴ as belonging partly to one of these regions and partly to the other, and the latter opinion being doubtless the most correct.

The Immigration of the Flora. With regard to the immigration of the flora very little is known. What the country looked like before the Ice Age, when the coal layers were formed and the erosive action was in full activity, we have no idea, and the coal layers, as mentioned in the introductory chapter on geology, have not been paleontologically investigated. When the large ice sheet covered the country (which at that time represented the small scattered islands of the present day) all or almost all plant-life — at any rate in its higher forms — was no doubt absent. It is possible that some of the most hardy of the Arctic flowering plants just managed to exist in the crevices on the vertical faces of the rocks where ice and snow could not remain, but I think it is well not to take this doubtful possibility into consideration and I regard *the whole flora as post-glacial*. James Geikie⁵ is also of this opinion.

As the land-ice gradually dissolved an Arctic flora, poor in species, must have migrated into the country, and an investigation of the lowest layers of the numerous small bogs would doubtless bring to light traces of this flora. From this latter the present temperate flora, fairly rich in species, has gradually developed.

¹ A. Engler: Die Entwicklungsgeschichte der Pflanzen seit der Tertiärzeit. Leipzig 1879.

² H. F. G. Strömfelt: Islands kärlväxter betraktade från växtgeografisk ock floristisk synpunkt, p. 84 (Öfvers. af Kongl. Sv. Vetensk. Akad. Forhandl. 1884. Nr. 8. Stockholm).

³ Grisebach: Die Vegetation der Erde. Leipzig 1872.

⁴ Drude: l. c. p. p. 358—359.

⁵ James Geikie: Prehistoric Europe. A Geological Sketch, p. 519. London, 1881.

How this post-glacial flora migrated into the country is not known for certain. A great many authors have given their opinion on this subject, as the Færøes, by reason of their geographical situation, form, as it were, the first milestone on the road from Europe to Greenland. Many of these authors assume that in post-glacial times Scotland, the Færøes, Iceland and perhaps East Greenland were connected, and that the flora of the respective countries has migrated mainly along this belt of land. Others set aside the idea of this continuous stretch of land and content themselves with pointing out the means by which plants generally migrate, viz. wind, water and animals.

It is the geological authors for the most part who maintain the theory of the unity of the land; among these may be mentioned E. Forbes¹ and James Geikie², and of non-geological authors especially A. Blytt³. Others, again, such as Warming⁴ and, as regards the Færøes, Wille and Börgesen, have, mostly on botanical grounds (also Nathorst⁵, who, by the by, maintains the theory of pre-glacial belt of land, but does not believe in a post-glacial land-bridge) been of opinion, that the present flora may very well have migrated across the sea.

This is such a very complicated question — owing to the few actual facts to which we can refer — that it cannot be definitely solved at the present time. *I, for my part, believe in the post-glacial belt of land* and in the following I shall endeavour to show what, in my opinion, is in favour of this theory and against that of immigration across the sea.

The geological configuration of the north-western part of Scotland, the Færøes and Iceland, with their broken-off basalt beds, clearly shows that they were formerly much larger, and their conformity shows that they are all from the same geological time and the submarine ridges which occur between them indicate the direc-

¹ E. Forbes: Mem. of the Geological Survey of Great Britain, vol. 1, 1846.

² J. Geikie: Prehistoric Europe.

³ Engler's bot. Jahrbücher. Bd. 2, p. 39.

⁴ E. Warming: Grönlands Vegetation (Medd. om Grönland XII. 1888), p. 169. — Grönlands Natur og Historie (Vidensk. Medd. fra den naturh. Forening i Kjøbenhavn 1891), p. 290.

⁵ A. G. Nathorst: Kritische Bemerkungen über die Geschichte der Vegetation Grönlands (Engler's Botan. Jahrbücher. 14. Bd. 1891), p. 213. — Fortsatta anmärkningar om den grönlandska vegetationens historia (Öfvers. af Kgl. Vetensk. Akad. Förhandl. 1891, Stockholm), p. 230.

tion of the connecting strips of land. This then suggests with some certainty that the lands were formerly connected, but it tells us nothing with regard to this connection having been pre-glacial or post-glacial, and we have no strong geological evidence to prove either theory. A circumstance, which, however, seems to favour the theory of a post-glacial land-bridge, has lately been mentioned by the Danish zoologist Adolf Jensen¹. On investigating the mollusc material brought home by the Danish Ingolf-Expedition it was proved, that at several stations in the sea between Jan Mayen and Iceland and towards the Færøes a large quantity of mussel shells were found at a depth of upwards of 1300 fathoms, while living specimens of these animals are never met with at a greater depth than some 100 fathoms. This in connection with the find of otoliths² of several species of *Gadus* which are otherwise only found along coasts seems to prove that an upheaval of enormous dimension (some 1200 fathoms) must have taken place since the days when they were actually living. Mr. Adolf Jensen fixes this time as late-glacial, and it seems to me that there is nothing wrong in supposing that the subsequent sinking process was so gradual that it extended far into the post-glacial period. (Further information on this point can be found in the papers quoted). If in the future this assumption should be proved to be correct, then the theory of the land-connection would become a recognized fact, as an elevation of 3—400 fathoms would suffice to produce the connecting bridge between East Greenland and Scotland. Moreover, as there is no geological evidence against this theory, we may fairly base the hesitation in accepting this assumption on an unwillingness to believe that such enormous geological changes could have taken place at so late a period, for almost all geologists have admitted small upheavals in the post-glacial period (lake of *Ancylus*) in the case of Northern Europe.

J. Geikie, who in his »Prehistoric Europe« propounds the theory of the post-glacial connection of lands, says very little in defence of it, as he has no geological evidence in its support and his sole argument, the composition of the flora, has not been suf-

¹ Adolf S. Jensen: Om Levninger af Grundtvandsdyr paa store Havdyb mellem Jan Mayen og Island (Vidensk. Medd. f. d. Naturhist. Forening i Kjøbenhavn, 1900, p. 229).

² See Idem: Hvorfra stamme Otolitherne i »Ingolf«s Bundprover. Ibidem 1900, p. 243.

ficiently applied, chiefly on account of the incompleteness and inaccuracy of the facts at his disposal. He is undoubtedly right in seeing proofs of this theory in the composition of the flora. Considering the smallness of the area covered by the Færøes (1325 square km.), their unfavourable climate and situation, and the uniformity of the soil, we may be justified in calling a flora comparatively rich which consists of 277 (+ 40) vascular plants. I do not think an area of similar size and quality in North Scotland contains a considerably larger number of species. Further the flora bears a wonderful resemblance to that of Scotland. If it had been a question of immigration across the sea, the flora taken as a whole would hardly have been so very much like that of Scotland. It would have consisted of fewer species, and the species would perhaps have developed or been in the act of developing peculiar forms, while the fact is that species with even the most limited geographical distribution and partly of critical value are not restricted to the Færøes, but on the contrary, as, e. g. species of *Euphrasia* (*E. atropurpurea*, *borealis* and *scotica*), also occur in Shetland and North Scotland or, as, e. g. *Alchimilla faeroënsis*, also in Iceland. It is further a fact that typical insular floras have a comparatively large number of species, whose fruits or seeds are adapted for dissemination by the agency of the wind, but this is not the case here, as out of the 277 species of which the flora consists, only 98 (35,5%) — all told — may be supposed to have been carried by the wind; of these 71 species have small seeds and only 27 (9,8%) have flying apparatus (hair, wings). Plants with fleshy fruits are also rare, only 6 having fruits resembling berries, to which must however be added some (18) aquatic plants, the fruits of which are drupes with a thin pulpy layer (*Polamogelon* etc.).

If we now investigate the action of the usual disseminating agencies, we shall see that the result is very small. The direction of the ocean currents, which might carry fruits (seeds) along with them, are as unfavourable as possible for the Færøes. A strong extension of the Gulf Stream¹ flows south-east of the islands, and as it comes from the open Atlantic to the south-west of the Færøes and has not touched land since the West Indies, the only seeds it could possibly convey are tropical. — *Entada Gigalobium*

¹ See Martin Knudsen and C. Ostenfeld: lagttagelser over Overfladevandets Temperatur, Saltholdighed og Plankton paa islandske og grønlandske Skibsruter i 1898. København 1899, p. 44.

and other seeds are also sometimes washed up on the shores of the Færøes — but it never brings species which would thrive there; and not only this, but running parallel as it does with the Færøes it forms a barrier between them and Scotland, as any seeds coming from Scotland are caught up by it and carried away from the Færøes and towards the north-east. Nor does the direction of the ocean currents between Iceland and the Færøes lead to any expectation of their conveying seeds. In my opinion *the ocean currents in these parts are of no consequence whatever in the matter in question.*

With regard to the birds, we find that they are generally mentioned in this connection and several authors lay great emphasis on them as an important factor in conveying seeds from land to land. In the case of the Færøes, it is Wille¹ especially who has pointed out how excellently they are adapted to spread fresh-water algæ, and Börgesen² follows him in maintaining their usefulness in this respect; they are of opinion that if sufficient importance were attached to this action of the birds the theory of a land-bridge would be unnecessary. As I also laid some stress on the migrations of birds (all the more, perhaps, because I held the other disseminating agencies to be of little value) I applied to an eminent Danish ornithologist, Mr. Knud Andersen, who has made a special study of the birds of the Færøes³, and he very kindly gave me the information I wanted. Relying on Palmén⁴, Wille has taken for granted, that immense numbers of migratory birds pass over the Færøes in spring from the British Isles to Iceland and Greenland — perhaps also to Norway — and return in autumn. But according to Mr. Andersen this statement must be considerably modified, as the migratory birds of Greenland chiefly go to America and come from thence⁵; the Norwegian migrants are only chance visitors, the greater part of them go along the

¹ N. Wille: Om Færoernes Ferskvandsalger og om Ferskvandsalgerne Spredningsmaader (Botaniska Notiser 1897. Lund), p. 17.

² F. Börgesen: Conspectus algarum novarum aquae dulcis quas in insulis Faeroënsibus invenit. (Vidensk. Meddelelser fra den naturhistoriske Forening i Kjøbenhavn 1899, p. 321.)

³ Knud Andersen: Meddelelser om Færoernes Fugle med særligt Hensyn til Nolso. I and II. (Vidensk. Medd. f. d. naturh. Forening i Kjøbenhavn 1898, p. 315; 1899, p. 239).

⁴ J. A. Palmén: Om foglarnes flyttningssvågar. Helsingfors 1874.

⁵ H. Winge: Grønlands Fugle. Medd. om Grønland XXI, 1899, p. 60.

west coast of Europe or through South Sweden, only a few exceptions being driven by chance so far west as the Færøes; and the Icelandic migratory birds are few in number. According to this we may say that *the migratory flight of birds over the Færøes is not considerable*, as is also proved by the fact that in the 6 years during which the lighthouses of the Færøes have existed a few birds have only *once* descended beside them, whilst in Denmark it actually »rains« birds round the lighthouses.

If we consider how the migrating birds would carry the seeds with them, it can only be in one of two different ways, either in the alimentary canals or adhering to their beaks, feet or feathers. With regard to this Mr. Andersen says that in Denmark during a period of 4—5 years the intestines of all the birds found at the lighthouses were examined with the result that all without exception were empty, i. e. *the birds migrate on an empty stomach*. Even if a bird had taken food just before it left the nearest land, Shetland, it would not retain it until it reached the Færøes, as it takes at most a few hours to digest the food and the useless parts are doubtless ejected during flight. With regard to the seeds adhering to the birds, Mr. Andersen says that here also we must bear in mind that we are speaking of migrating birds, for while a bird shot in the fields may have clumps of earth, etc. (possibly with seeds) adhering to it, this has never been found to be the case with migratory birds on the move, and he again refers to the quantity of birds from lighthouses which he has had for investigation to support him in stating with some certainty that *migratory birds are almost always clean when they journey*.

Thus we see that an ornithologist is of opinion that *migratory birds are of hardly any importance as disseminators of plants*.

Lastly, we have the wind as a disseminating agency, and though we cannot altogether dispute its title to be such, yet we must remember that the most frequent winds (see p. 35) are the south-westerly and northerly which come from the open sea, while further, only a small quantity of species have seeds which can be carried by the wind. I am therefore of opinion that *though some of the Færøese specimens may possibly have been introduced by the agency of the wind, the greater part were introduced otherwise*. Further, ever since the Færøes have been inhabited, man has doubtless introduced and keeps on introducing new species.

A summary of the above arguments leads to the conclusion

that the chief part of the present flora of the Færøes (I am only speaking of the vascular plants) has migrated across a post-glacial belt of land. The plants then have migrated »step by step and in collected bodies«, as is held also by A. Blytt (Engler's *Jahrbücher*, p. 47) with regard to the Norwegian flora.

Apart from this, *a few species have been introduced by the agency of the winds* (and birds?). This, I think, explains why some of the species have only been found either at a single place or at a few places. As examples I may mention species such as *Salix glauca* and *Dryas*, which, being well adapted to be carried by the wind, have been found on a few of the higher mountains towards the north-east. If we regard them as survivals (relicts) we shall be at a loss to explain why they do not occur on other mountain summits of a similar height and having the same conditions of life. —

Lastly I will say a few words about man's influence on the immigration. In my »Phanerogamae and Pteridophyta«, † denotes that the species has been lately introduced by human agency and has not yet become naturalised, but besides these I think that some of the others migrated into the islands when man began to cultivate the ground, and they are now found wherever the land is cultivated, but they have as yet had too short a time to extend beyond the cultivated area, though a few, e. g. *Ranunculus repens* and *Trifolium repens* spread beyond and following the mountain paths even extend some way up the hills. J. M. Norman¹ mentions similar cases in Arctic Norway.

As examples of species introduced by man and now regarded as indigenous may be mentioned: —

<i>Myosotis arvensis.</i>	<i>Spergula arvensis.</i>
— <i>versicolor.</i>	<i>Stellaria media.</i>
<i>Senecio vulgaris.</i>	<i>Capsella bursa pastoris.</i>
<i>Tanacetum vulgare.</i>	<i>Lathyrus pratensis.</i>
<i>Tussilago Farfara.</i>	<i>Trifolium repens.</i>
<i>Galeopsis Tetrahil.</i>	<i>Vicia Cracca.</i>
<i>Veronica Beccabunga.</i>	<i>Polygonum amphibium.</i>
<i>Cerastium glomeratum.</i>	— <i>aviculare.</i>

¹ J. M. Norman: Norges arktiske Flora. II. Oversigtlig Fremstilling, 1ste Halvdel. Kristiania 1895, p. 24 and p. 196.

Rumex domesticus.

— *obtusifolius.*

Ranunculus repens.

Urtica dioica.

Viola tricolor.

Agropyrum repens.

Airopsis præcox.

Alopecurus geniculatus.

Digraphis arundinacea.

Holcus lanatus.

— *mollis.*

Poa annua.

— *trivialis.*

BRYOPHYTA

BY

C. JENSEN.

THE following list of the Færøese species of Mosses and their distribution on the group of islands is based on the material which is to be found in both the old and the new collections in the Museum of the Botanical Gardens, Copenhagen. The greater part of these collections were collected by Rostrup and Feilberg (1867), while other rather valuable contributions, some larger and some smaller, were made by Lyngbye (1817), Trevelyan (1821), an unknown collector (1831), Feddersen (1886), Börgesen (1895), Ostensfeld (1895—97), Warming and J. Hartz (1897). I have further had access to Dr. Rostrup's private collection and to the collection made by the Swedish botanist, H. G. Simmons; the latter collection is to be found in the Botanical Museum, Lund. In 1896, from May 8th. to July 15th., I traversed the greater part of the group of islands, viz. Syderö, Store Dimon, Sandö, Myggenæs, Vaagö, Strömö, Österö and Bordö for the purpose of investigating the Mosses and making collections. I was fortunate enough to find a large number of species, hitherto unknown on the islands and among these a species which is doubtless new to science, viz. *Pohlia færoënsis*. I also took many notes on the horizontal and vertical distribution of the species and their social relation to each other and to the vascular plants in different localities. In the following list I have only numbered those species which I have actually seen. In one single case only, viz. under *Oncophorus virens*, have I given a habitat, the correctness of which I have not been able to ascertain. Older publications of species which are wanting in the list will be found in the list of corrections and alternations.

I owe thanks to Professor Loitlesberger (Görz) and Mr. Hagen (district-physician, Opdal) for having kindly assisted me with regard to the determination of relatively, *Martinelliae* and *Brya*.

List of abbreviations.

c. = continental mosses, such as are known to occur on the European-Asiatic continent.

w. c. = western-continental mosses, such as are known to occur principally on the European continent, but appears to be wanting, at all events to be rare in Asia.

Atl. = Atlantic mosses, such as are known to occur in the western parts of Europe, principally along the shores of the Atlantic Ocean or on the European islands therein, but also along the Mediterranean sea and the Baltic.

suba. = subalpine or subarctic.	Str. = Strömö.
alp. arct. = alpine-arctic.	Syd. = Syderö.
n. l. = northern limit.	Öst. = Österö.
ab. = about.	T. = Trevelyan.
espec. = especially.	Lb. = Lyngbye.
acc. = according.	H. = Hornemann.
fr. = fruit, fruiting.	R. = Rostrup and Feilberg.
	F. B. = F. Børgesen.
B. = Britain.	Sm. = Simmons.
Nw. = Norway.	O. = C. Ostenfeld.
l. = Iceland.	J. H. = J. Hartz.
Fær. = The Færöes.	! = C. Jensen.

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List of species.

Hepaticae.

1. *Marchantia polymorpha* L.

B., I., Nw. (c.). — Fær., rare. Round springs, on wet banks by streams, from the sea to ab. 300 m. Reported from Fær. by Lb., H. and T. Syd.: Leöre near Kvalbø, ♂ (R.). Str.: Near Nordredal, round spring, barren (!); near Kalbak (Sm.).

Var. *alpestris* Nees.

B., I., Nw. (c., suba.). — Fær., rare. On moist ground in crevices of rocks. Nolsø, barren (F. B., Sm.). Öst.: Gjøv, barren (!).

2. *Chomocarpon quadratus* (Scop.) Lindb., *Preissia quadrata* Nees.

Nw. (c., suba.). — Fær., very rare. On moist ground in crevices of rocks. Öst.: Svinaa, fr. (O.).

3. *C. commutatus* (Lindenb.) Lindb., *Preissia commutata* Nees.

B., I., Nw. (c.). — Fær., rare. On moist ground in crevices of rocks, on wet banks by streams, from the sea to ab. 100 m. Syd.: Vaag, fr. (O.); Kvanhaugen, fr. (O., !). Sandø: ♀ (R.); near Grothusvatn, barren (!).

4. *Fegatella conica* (L.) Corda.

B., I., Nw. (c.). — Fær., rare. On moist, shady ground and moist rocks, espec. by streams near the coast. Only barren. Syd.: North side of Skaalefjæld (O.). Sandø: Near Grothusvatn (O.). Str.: Thorshavn (R.). Nolsø: The east side (O.). Öst.: Svinaa (O.); near Ejde; Gøte-gjøv; between Fuglefjord and Gøte (!). Viderø: Villingedalsfjæld (R.).

5. *Frullania Tamarisci* (L.) Dum.

B., I., Nw. (w. c.). — Fær., very common. On the ground, on stones and rocks, both in wet and dry localities and espec. in uncultivated places, from the sea shore to the summits of mountains. Fr. rare. Fær. acc. to H. and T. Syd.: St. Dimon; Sandø; Hestø; Vaagö; Myggenæs; Str.; Nolsø; Öst.; Nordreøerne.

A most varying species, often of a more slender habit than is usual in continental forms. The reflexed leaf point is nearly always more or less acute.

Var. *robusta* Lindb.

B., Nw. (Atl.). — Fær., rare. On rocks in low-lying situations, espec. with southern aspect. Syd.: Near Famienvatn, ♀ barren; below Örne-fjæld, fr. (!). Sandø: Near Sand and Holsavatn, barren (!).

F. hispanica Nees. (*F. Tamarisci* var. *hispanica*) is found in Ireland, but not yet in Fær. The *F. microphylla* (Gottsch.) Pears., which has been met with in B. and Nw., I was not so fortunate as to find in Fær.

6. *F. fragilifolia* Tayl.

B., I., Nw. (w.c., suba.). — Fær., rare. On shady rocks, from the sea to ab. 100 m. Only barren. Syd.: Below Ørnefjæld, ♀; at Norbes Ejde (!). Str.: Arge (R.); Gjøverbotn near Kvivig; Vestmanhavngjov (!).

7. *F. Jackii* Goltsch.

B., Nw. (w.c., suba.). — Fær., rare. On large stones in low-lying situations. Str.: Kalbakbotn, ab. 50 m. above the sea, barren (Sm.).

Acc. to H. »*Jungermannia dilatata* L.« is detected in Fær., but no specimens has been met with in the collections. Also notified by T.

8. *Lejeunea calcarea* Lib.

B., Nw. (Atl.). — Fær., very rare. On wet, shady rocks. Str.: Near Saxendalen (!).

9. *L. microscopica* Tayl.

B., (Atl.). — Fær., very rare. On moist rocks in low-lying situations, creeping upon other mosses such as *Marsipella emarginata*, *Heterocladium heteropterum*, *Porotrichum alopecurum*, *Thuidium tamariscifolium*, *Hylocomium proliferum* and upon *Hymenophyllum pellatum*. Only barren. Str.: Vestmanhavngjov (F. B. !). Øst.: Gøtegjov (!).

10. *L. patens* Lindb., *L. serpyllifolia* Sw. ex p.

B., Nw. (Atl.) — Fær., common. On the ground and on moist rocks, creeping among and upon other mosses. In similar places as *Frullania Tamarisci*, from the sea to the summits of mountains. Colesula not rare. Syd.: Lopra; Vaag; Famiien; Ørdevig; Ørnefjæld; Trangisvaag (!); Frodebø (R.). Sandø: Between Sand and Skopen; Skorene (!). Vaagø: Rensatinder; Kvilchinavatn; Vigum; Thormansgjov (!). Str.: In many places (F.B.,!). Nolsø: The east side (O.). Øst.: Svinaa (O.); Gøtegjov (!). Bordø (!).

11. *L. cavifolia* (Ehrh.) Lindb., *L. serpyllifolia* Sw. ex p.

B., I., Nw. (w.c.). — Fær., not rare. On rocks and upon mosses, espec. in shady places, less frequent than *L. patens*. Colesula rare. Syd.: Vaag; Famienvatn; below Ørnefjæld; near Trangisvaag (!). Sandø: Skorene (!). Vaagø: (R.); Midvaag; Thormansgjov; Kvilchinavatn (!). Myggenæs: (!). Str.: Gjøverbotn near Lejnum; Vestmanhavngjov; near Saxen (!). Øst.: Næs (R.).

Var. *planiuscula* Lindb.

B., Nw. (w.c.). — Fær. Vaagø: Rensatinder (!).

»*Jungermannia serpyllifolia*« is notified by H. and T.

12. *Radula aquilegia* (Tayl.) Nees.

B., Nw. (Atl.). — Fær. On rocks, often exposed, in low-lying places not rare; on the ground amongst grass and mosses rare. Only barren. Syd.: Lopra; Vaag (!); Hove (J.H.); Famiien (!); Trangisvaag (J.H.); Norbes Ejde (!). Sandø: Between Sand and Skopen (!). Vaagø: Thormansgjov; Vigum (!). Str.: Vestmanhavngjov (F. B.). Øst.: Gøtegjov (!).

13. *R. commutata* Jack. (Plate II).

B., Nw. (w. c., suba.). — Fær., frequent. On rocks and larger stones, from the sea-shore to the higher parts of the mountains. Only barren. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

The Færøese ♀ plants agrees exactly with the description and figure in »Flora«, 1881 (Jack.: Die europäischen *Radula*-Arten). On the ♂ plant the growth of stem is continued, and the ramification therefore more or less pinnate and bipinnate. The antheridia occupy the apical part of the stem and the uppermost branches, never forming long and narrow spikes as in *R. Lindbergii* and *germana*, and there is scarcely any difference in form and size between the perigonal- and the other leaves. *R. Lindbergii* and *R. germana* are not found in the Fær. »*Jungermannia complanata* L.« is recorded by H. and T. Discoverers name not given. Specimens are wanting.

14. *Porella Thuja* (Dicks.) Lindb., Madotheca Thuja Dum.

B., Nw. (w. c.). — Fær., very rare. On exposed rocks. Öst.: Near Ejde, barren (!).

15. *P. rivularis* (Nees) Lindb., Madotheca rivularis Nees.

B., I., Nw. (w. c.). — Fær., frequent. On moist rocks, from the sea to the higher parts of the mountains. Only barren. Syd.; St. Dimon; Str.; Nolsö; Öst.; Nordreöer.

Very variable in size and habit, colour, density of the tufts. Some small forms are not uncommon, the most extreme is:

Var. *færoënsis* v. n.

Tufts dense, opaque, deep-green or partly brownish-green; plant 2–3 centim. long, gracile, irregularly pinnate, dense leaved, branches obtuse; auricles half as broad as the stipules, decurrent, obtuse, or acute, one or both margins recurved, entire; leaf-cells with thin walls and distinct trigones at the angles, the interior filled with chlorophyll, upper cells 0,013–0,020 millim. broad, smaller than in the typical form, where they are 0,020–0,032 millim.

Fær., rare. On shady rocks. Syd.: Norbes Ejde, barren (!).

16. *Pleurozia purpurea* (Lightf.) Lindb., Physiotium cochleariforme Nees.

B., Nw. (Atl.). — Fær., frequent. Moist or spongy ground, amongst other mosses, rare on stony ground (»Ur«) amongst *Grimmia hypnoides*, from 50–400 m. Only barren. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

17. *Lepidozia setacea* (Web.) Mitt., Jungermannia setacea Web.

B., I., Nw. (w. c.). — Fær., very rare. Spongy ground, amongst *Sphagnum*, *Campylopus atrovirens*, etc. Str.: Glivursrejn, fr. (!).

18. *Bazzania triangularis* (Schleich.) Lindb., *Mastigobryum deflexum* Syn. Hepat.

B., Nw. (w. c., suba.). — Fær., not rare. On moist ground in fissures of rocks, in hollows, on banks by streams, often amongst other mosses. From the sea to the summits of mountains. Only barren. Syd.: Vaag; summit of Kvannelfjæld; below Örnefjæld; Præstefjæld (!). Sandö: Skorene (!). Vaagö (R.) Rensatinder; Thormansgjøv (!). Str.: Nordredal; Gjoverbotn near Kvivig; pass at Örvesfjæld (!). Öst.: Svinaa (O) Göte-gjøv; between Fuglefjord and Skaalebotn; Trelavandsskardet (!).

19. *Odontoschisma Sphagni* (Dicks.) Dum., *Sphagnoecetis communis* Nees.

B., L., Nw. (w. c.). Fær., very rare. Spongy ground. Only barren. Str.: Gliversrejn; near Højvig (!).

20. *O. denudatum* (Nees) Dum., *Sphagnoecetis communis* var. *maerior* Syn. Hepat.

Var. *elongatum* Lindb.

L., (Finland). (alp. arct.). — Fær., rare. Spongy ground, amongst other mosses, from the sea to ab. 400 m. Only barren. Str.: Gliversnæs (R.); Gliversrejn; Højvig (!). Nolsö (R.). Öst.: Stöla fjældsskard (!). Bordö: Klakken (!).

21. *Hygrobiella laxifolia* (Hook.) Spr., *Jungermania laxifolia* Hook.

B., L., Nw. (alp. arct.). — Fær., very rare. Moist rocks by streams, from 300—500 m. Str.: Near Saxen, barren (!). Öst.: Between Skaalebotn and Heller, with colesula (!).

22. *Cephalozia Lammersiana* (Hüb.) Spr., *Jungermania Lammersiana* Hüb.

B., L., Nw. (w. c.). — Fær., rare. Moist ground, from the sea to ab. 100 m. Syd.: Vaag, with colesula (!). Str.: Gliversrejn, ♂ and ♀, with colesula; Gjoverbotn near Kvivig (forma submersa), barren (!).

The *Cephalozia aquatica* Limpr. (distrib.) appears to be only a submers form of *C. Lammersiana*.

23. *C. bicuspidata* (L.) Dum., *Jungermania bicuspidata* L., *Trigonanthus bicuspidatus* Spr.

B., L., Nw. (c.). — Fær., not rare. Turfy soil in cultivated and uncultivated places, from the sea to ab. 500 m. Syd.: Trangisvaag, fr.; below Örnefjæld, with colesula; Frodebö, fr.; Præstefjæld, barren; Kvalbö (!). Vaagö: Midvaag, fr.; Thormansgjøv, barren; east side of Vaagö (!). Myggenæs: Kolvadal, barren (!). Str.: Kirkebörejn (R.). Gliversrejn, fr.; Thorshavn, with colesula; between Nordredal and Öreenge, fr.; at Lejnumvatn; Saxen (!). Öst.: Ejde, fr.; Gjøv, fr.; Fuglefjord; between Skaalebotn and Heller, barren (!).

Var. *rigidula* Nees.

Fær., moist heaths. Str.: Saxen, fr. (!). Öst.: Ejde, barren (!). Bordö: Aærne, fr. (!).

24. **C. media** Lindb., *Cephalozia multiflora* Spr.

B., I., Nw. (c.). — Fær., rare. Spongy soil, amongst *Sphagnum*. Syd.: Near Trangisvaag ab. 300 m., fr. (!). Str.: Gliversrejn, barren (!).

25. **C. divaricata** (Franc.) Dum., *Jungermania Starkei* Nees.

B., I., Nw. (c.). — Fær., not rare. On the ground, amongst and upon mosses, in crevices of rocks, from the sea to the summits of mountains. Syd.: Vaag; Kvannefjæld; below Örnefjæld, fr.; Frodebö (!). Sandö: At Grothusvatn (!). Vaagö: At Sörvaagvatn (J. H.). Myggenæs (!). Str.: Thorshavn (R., !). Öst.: Near Bredaskard, with colesula; near Samfjæld (forma) (!). Bordö: Near Aærne (!). Viderö: Malinsfjæld (O.).

26. **C. bifida** (Schreb.) Lindb., *Jungermania byssacea* Roth., Hook. *Jungermania divaricata* Nees.

B., I., Nw. (c.). — Fær., rare. On the ground in uncultivated places in low-lying situations. Syd.: Kvanhaugen (forma) (!). St. Dimon, with colesula (!). Str.: Near Thorshavn, with colesula (!).

27. **Lophocolea bidentata** (L.) Dum.

B., Nw. (w. c.). — Fær., common. On cultivated ground abundant, on uncultivated sparse; rare in higher regions of the isles. Only barren. Fær. acc. to H. and T., named *Jungermannia bidentata* L. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

28. **L. cuspidata** Limp.

B., Nw. (w. c.). — Fær., rare. On the ground, only in low-lying parts of the isles. Syd.: Præstefjæld (!). St. Dimon (!). Nølsö: East side (O.). Bordö: Klaksvig, fr. (!).

There is very little difference between these two *Lophocoleae*, and I think that *L. cuspidata* may be only a monoicous variety of *L. bidentata* or vice versa.

29. **Cheiloscyphus polyanthos** (L.) Cord.

B., I., Nw. (c.). — Fær., rare. On moist ground, from the sea to ab. 300 m. Only barren. Syd.: Sumbö; near Trangisvaag and Tværaa (!). Sandö: Trödumbö (!). Öst.: Gjøv (!). Viderö: Malinsfjæld (!).

Var. **pallesceus** (Schrad.) Hartm., *Cheiloscyphus viticulosus* (L.) Lindb.

B., I., Nw. (c.). — Fær., frequent. Borders of rills, in ditches and round springs, from the sea to ab. 300 m. Syd.; Sandö; Vaagö; Str.; Österö; Bordö.

Var. **rivularis** Nees.

B., Nw. (c.). — Fær., rare. In streams. Syd.: Below Præstefjæld (O.). St. Dimon (!). Sandö (!).

30. **Kantia calypogea** (Radd.) Lindb., *Calypogea Trichomanis* var. *repanda* Syn. Hepat.

B.?, Nw. (w. c.). — Fær., very rare. On moist ground. Syd.: Below Örnefjæld, barren (!).

31. **K. Trichomanis** (L.) Lindb., *Calypogeia Trichomanis* Cord.

B., I., Nw. (c.). — Fær., not rare. In wet, turfy soil, from the sea to ab. 300 m. Only barren. Syd.: Vaag; Trangisvaag; Kvalbø (!). St. Dimon (!). Sandø: Todnæs (!). Str.: Gjoverbotn near Kvivig; at Lejnumvatn; Vestmanhavngjov (!). Öst.: Næs (J. H.). Bordø: Klakken; near Aaerne (!).

Var. *adscendens* Nees.

Fær., frequent. On wet or boggy ground, amongst other mosses. Only barren. Syd.; Sandø; Str.; Öst.; Bordø.

32. **Saccogyna viticulosa** (Mich.) Dum.

B., Nw. (Atl.). — Fær., not rare. On moist rocks and declivities, often amongst other mosses, from the sea to ab. 200 m. Only barren. Syd.: Lopra (!); Vaag (Sm., !); Fannenvatn (!). Kvanhaugen (O.). Præstefjæld (!). Sandø: At Grothusvatn (!). Hestö (F. B.). Vaagö: At Kvilchinavatn (!). Str.: Gjoverbotn near Kvivig (!). Vestmanhavngjov (F. B., !). Öst.: Götegjov; near Ejde (!).

33. **Ptilidium ciliare** (L.) Hamp.

B., I., Nw. (c.). — Fær., frequent. On the ground amongst mosses, from the sea-shore to the summits of mountains. Only barren. Fær., acc. to H., named *Jungermannia ciliaris* L., and acc. to T. found by Lb. Syd.; Sandø; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

All the Færøese specimens belong to the var. *a. ericetorum* Nees., which I, however, can only regard as a local form.

34. **Mastigophora Woodsii** (Hook.) Nees.

B. (Atl.). — Fær., frequent. Moist ground in heaths and rocky places, amongst other mosses or in small pure tufts, from rather low-lying parts to a height of ab. 450 m. Only barren. Syd.; Sandø; Vaagö; Str.; Nolsö; Öst.; Bordø.

35. **Herberta adunca** (Dicks.) Gr., *Jungermannia juniperina* var. β . Hook., *Sendtnera juniperina* var. β . Nees, *Sendtnera adunca* Gott.

B., Nw. (Atl., suba.). — Fær., frequent. In turfy and grassy places from the sea-level to the summits of mountains. Only barren. Syd.: Sandø; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordø.

Forms with subfalcate or suberect leaves are frequent in the Færøes, they appear only to be local forms, without regard to height above the sea. The colour doubtless also depends on the locality, in open, exposed places it is often darker, in shady places, amongst grass and other mosses, often paler brown. The *Sendtnera Souteriana* N. from the Austrian Alps appears to be only a forma or varietas *brevifolia* of *Herberta adunca*. A small subramose form (*\gamma*. *ramosa* L. et Lg., Syn. Hepat. ?) I picked up near Vigum on Vaagö.

36. *Anthelia julacea* (L.) Dum., *Jungermania julacea* L.

B., I., Nw. (w.c., suba.). — Fær., frequent. On the ground in rocky places and on gravelly soil, sparingly in low-lying parts, common at ab. 300 m. and upwards to the summits of mountains. Sometimes ab. 200–300 m. fr. abundantly. Fær. acc. to Landt who named it *Jungermannia violacea*. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

37. *A. nivalis* (Sw.) Lindb., *Jungermania Juratzkana* Limpr.

B., I., Nw. (c., alp. arct.). — Fær., frequent. On bare ground or upon mosses and lichens, from ab. 100 m. to the summits of mountains. Frequently fr. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

Acc. to T. the »*Jungermannia nivalis*« has been found by Lb., but the specimens which are gathered on Skjællingfjæld, belong to *Cesia concinnata*.

38. *Blepharostoma trichophyllum* (L.) Dum., *Jungermania trichophylla* L.

B., I., Nw. (c.). — Fær., not rare. On the ground and on moist rocks, often amongst other mosses, from the sea to the summits of mountains. Syd.: Vaag; Kvanhaugen (!). Hestö (F.B.). Vaagö: The east side (!). Str.: Højvig; Gjoverbotn; Skjællingfjæld (!); Vestmanhavngjov (F.B.). Öst.: Stölafjæld; Götegjov; between Skaalebotn and Heller (!). Kalsö: Blankeskaalefjæld (J.H.).

39. *Martinellia subalpina* (Nees) Lindb., *Scapania subalpina* Nees.

B., I., Nw. (c., suba.). — Fær., not rare. In moist and gravelly soil, rare in low-lying, but rather frequent in higher parts of the mountains. Fr. rare. Syd.: Prästefjæld (!). Sandö: At Grothusvatn; Skorene (!). Vaagö: Midvaag; near Kvilchinavatn (!). Str.: Between Nordredal and Öreenge (!). Öst. (R.). Near Ejde; Slattaratinde; between Skaalebotn and Heller (!). Bordö: Gjerdumrejn (O.).

In higher regions the tufts are often more compact, the plants more gracile and assuming an ochraceous or fulvid tinge.

40. *M. gracilis* Lindb., *Jungermania resupinata* L., *Scapania resupinata* Carr.

B., Nw. (Atl.). — Fær., common. In patches or small tufts on wet heaths, by streams, in stony places, amongst other mosses and grass, from low-lying parts to the summits of mountains. Fr. rare. First discovered by R. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

»*Jungermannia resupinata* L.« is recorded from Fær. by T.

41. *M. planifolia* (Hook.) Gr., *Scapania planifolia* Dum.

B., Nw. (Atl.). — Fær., rare. Stony ground and declivities, amongst other mosses in higher parts of the mountains, ab. 400 m. Only barren. Str.: Near Nordredal (420 m.; below Örvessfjæld (400 m.), (!). Öst.: Eastern declivities of Trelavandsskardet (380 m.), (!).

42. **M. undulata** (L.) Gr., *Scapania undulata* Dum.

B., I., Nw. (c.). — Fær., common. In streams and rills, round springs, from the sea to ab. 400 m. Only barren. Fær. acc. to H., named *Jungermannia undulata* L. Syd.; Hestö; Vaagö; Str.; Nolsö; Öst.; Bordö; Viderö.

Leaves entire, plants often in stout, swelling tufts, of a deep green, green and purple or deep purplish brown colour.

43. **M. purpurascens** (Nees) Pears., *Jungermannia nemorosa* var. *β. purpurascens* Nees (ex p.), *Scapania dentata* Heeg.

B., I., Nw. (c., suba.). — Fær., very common. On moist ground, on stones and rocks, especially on borders of streams and rills, from the sea-shore to ab. 500 m. Fr. not rare. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Leaves more or less distinctly toothed; plants mostly variable in size, habit and colour, from 1 centim. to about 20 centim. in length, in dense, green and purple mats on stones and rocks by streams or on moist ground amongst other mosses, in green, pale green and purplish tinged, pure tufts.

44. **M. irrigua** (Nees) Lindb., *Scapania irrigua* Nees.

B., I., Nw. (c.). — Fær., frequent. On moist ground in cultivated and uncultivated places, from the sea to above 500 m. Syd.; Sandö; Myggenæs; Str.; Öst.; Bordö.

45. **M. uliginosa** (Sw.) Lindb., *Scapania uliginosa* Dum.

B., I., Nw. (w. c., alp. arct.). — Fær., very rare. On rocks in streams. Only barren. Str.: Below Örvesfjæld (450 m.), (!). Bordö: Graverdalen near Bordövig, at 10 m. and 300 m. (!).

46. **M. rosacea** (Cord.) Lindb., *Scapania rosacea* Syn. Hepat.

B., Nw. (c.). — Fær., rare. Moist ground in low-lying parts. Only barren. Syd.: Lopra; below Örnefjæld; near Trangisvaag (!). Sandö: Todnæs (!). Öst.: Near Ejde (!).

47. **M. geniculata** (Mass.), *Scapania geniculata* Mass. — Loitlesberger det.

Italy. — Fær., very rare. On moist, cultivated ground. Str.: Near Thorshavn, where it grows together with *Pellia Neesiana*, *Ceratodon purpureus* and *Pohlia nutans*. Only barren (!).

Perhaps only an extreme form of *M. rosacea*.

48. **M. curta** (Mart.) Lindb., *Scapania curta* Dum.

B., I., Nw. (c.). — Fær., rare. On moist ground and shady rocks from the sea to ab. 300 m. Syd.: Ördevig (!). Myggenæs (!). Str.: Thorshavn; Skjællingfjæld (!). Svinö, ab. 200 m. (J. H.).

49. **Diplophyllum albicans** (L.) Dum., *Jungermania albicans* L.

B., I., Nw. (w. c.). — Fær., everywhere. On the ground, on stones and rocks, from the sea-level to the summits of mountains. Perhaps the the commonest Færøese Hepaticae. Rare with colesula or fr. Green forms are often gemmiparous. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Myggenæs; Vaagö; Str.; Nolsö; Öst.; Nordreöer.

Very variable in colour and habit, pale-green, yellowish-green, ochraceous, more or less brown or reddish-brown (var. *purpurascens*). The inferior lobe of the leaves often more or less incurved. Creeping amongst other mosses or forming scattered tufts from 1 to about 10 centim. in height.

50. **Plagiochila spinulosa** (Dicks.) Dum.

B., Nw. (All.). — Fær., rare. On moist shady rocks, in cavities among larger stones, to ab. 300 m. Only barren. Syd.; Vaag (!). Sandö; Skorene (!). Vaagö; Thormansgjov (!). Öst.; Göteborg (!).

51. **P. asplenioides** (L.) Dum.

B., I., Nw. (c.). — Fær., frequent. On the ground, on banks by streams, in fissures of rocks, often amongst other mosses, from the sea-shore to the summits of the mountains. Fr. rare. Acc. to H. and T. the '*Jungermannia asplenioides* L.' has been detected in Fær. by Lb., but specimens are wanting. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Var. **heterophylla** Nees.

Syd.; Vaag, on rocks (!).

Var. **minor** Lindenb.

Frequent. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

Var. **humilis** Lindenb.

Hestö (R.). Strömö; Højvig (R.).

52. **Mylia Taylori** (Hook.) Gr., *Jungermania Taylori* Hook.

B., Nw. (w. c., suba.). — Fær., rare. In spongy places, often associated with *Pleurozia purpurea*, from 200 m. to 450 m. Only barren. Syd.: Near Trangisvaag (!). Vaagö: Rensatinder (!). Str.: Near Nordredal; between Nordredal and Öreenge; below Örvesfjæld (!). Öst.: Stölafjælds-skardet; eastern declivity of Trelavandsskardet (!).

53. **M. anomala** (Hook.) Gr., *Jungermania anomala* Hook.

B., I., Nw. (c.). — Fær., very rare. In spongy places, amongst *Sphagnum*. Barren. Str.: Gliversrejn (!).

54. **Jungermania cordifolia** Hook.

B., I., Nw. (w. c., suba.). — Fær., common. On stones and rocks in streams, often in extensive livid mats, from low-lying parts to ab. 300 m. Fr. abundantly. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Öst.; Nordreöer.

Somewhat variable in size and density, form and direction of the leaves. A gracile, dense tufted form is gathered near Thors-havn (R.).

55. **J. riparia** Tayl.

B., I., Nw. (w. c., suba.). — Fær., not rare. On moist rocks and on the borders of mountain rills, to ab. 400 m. Colesula frequent. Syd.: Vaag; near Trangisvaag; near Norbes Ejde at Kvalbø (!). Vaagö: The east side of the island (!). Str.: Gliversrejn; near Nordredal; between Nordredal and Öreenge; Gjoverbotn near Kvivig; Vestmanhavngjov (!). Nolsö (F. B.). Öst.: Næs (R.); near Ejde (!).

Var. **rivularis** Bern.

Öst.: Götegvig, barren (!).

Some of the specimens I had at first referred to var. *salevensis* Bern., but the limits between this and the typical form appears to me too unimportant to keep them separate.

56. **J. atrovirens** Schleich., *Aplozia atrovirens* Dum.

B., Nw. (c., suba.). — Fær., rare. On moist rocks in low-lying parts of the islands, in higher parts also on wet gravelly ground on the borders of rills. Fr. rare. Syd.: Ördevig, barren; near Trangisvaag (!). Str.: Saxendalen, barren (!). Öst.: Eastern declivity of Trelavandsskardet, ♂ (!), near Ejde, barren (R); near the summit of Slattaratinde, fr. (!).

The only difference of value between *J. atrovirens* and *J. pumila* appears to be their genus. I have referred all barren specimens to *J. atrovirens*, as the barren state appears to point to the dioicous species.

57. **J. pumila** With.

B., I., Nw. (c., suba.). — Fær., very rare. On moist rocks. Vaagö: East side of the island, on a prostrate tuft of *Philonotis fontana*, paroicous and fruiting abundantly (!).

58. **J. Mülleri** Nees, *J. acuta* Lindenb., ex p.

B., I., Nw. (w. c., suba.). — Fær., rare. On moist ground in crevices of rocks and on shady rocks, in low-lying parts of the isles. Sandö: At Saltvigsvatn (!). Hestö (R.). Vaagö: Thormansgvig (!). Str.: Vestmanhavngjov, with colesula (!). Öst.: Götegvig (!).

Var. **bantryensis** (Hook.) Kaalaas, *J. bantryensis* Hook.

B., Nw. (w. c., suba.). — Fær., rare. On moist ground among rocks, espec. near streams, in low-lying parts of the isles. Syd.: Vaag; near Trangisvaag; Kvanhaugen; Prästefjæld (!); north side of Skaalefjæld near Kvalvig (O.). Str.: At Lejnumvatn; Vestmanhavngjov; Saxendalen (!). Bordö: Graverdalen near Bordövig (!).

59. *J. obtusa* Lindb.

Nw. (w. c., suba.). — Fær., very rare. On moist ground amongst other mosses, especially *Hylocomia*. Only barren. Öst.: Near the summit of Stöla fjæld, 500 m.; near Ejde, 100 m. (!).

60. *J. inflata* Huds.

B., I., Nw. (c.). — Fær., very rare. On spongy ground. Str.: Glivers-rejn, amongst *Campylopus atrovirens* and other mosses, with colesula (!).

61. *J. Wenzelii* Nees.

Nw. (alp. arct.). — Fær., very rare. On moist ground. Vaagö: Near the summit of Rensatinder, amongst *Grimmia hypnoides*, barren (!).

This species appears only to be an extreme form of *J. alpestris*, which occurs polymorphous especially in alpine districts. The principal differences between them are only: —

<i>J. alpestris</i>	<i>J. Wenzelii</i>
Greatest breadth of the leaves is below or in the middle.	Greatest breadth of the leaves is above the middle. Gemmæ pale-green or brownish.
Gemmæ brownish.	

From *J. ventricosa* both the species are distinguished by the smaller leaf-cells. In *J. alpestris* and *J. Wenzelii* the marginal cells of the lobules are only 0,016—0,022 mm. and their walls yellowish, in *J. ventricosa* 0,019—0,032 mm. in diameter and with whitish or pale-green, at all events not yellowish walls. (See also S. O. Lindberg und H. W. Arnell: Musci Asiae borealis. Kongl. Sv. Vet.-Akad. Handl. Bd. 23 Nr. 5, pp. 47—49.).

62. *J. alpestris* Schleich.

B., I., Nw. (c., suba.). — Fær., frequent. Amongst lichens and mosses on the ground, on stones and exposed rocks, especially in sunny places, from low-lying parts of the isles to the summits of mountains. Colesula not rare. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Viderö.

Var. *amphigastriata* v. n.

Stems erect or suberect, with minute, rudimental, unequally bifid stipules.

Syd.: Summit of Kvannefjæld (!). Sandö: Summit of Tinden; Skorene (!). Vaagö: Near the summit of Rensatinder (!). Öst.: Göteggjov (!).

63. *J. ventricosa* Dicks., *J. porphyroleuca* Nees.

B., I., Nw. (c.). — Fær., frequent. Amongst mosses and lichens on the ground, on stones and rocks, from the sea-shore to ab. 500 m. First discovered by T. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

I have been unable to find any difference of specific value between *J. ventricosa* Dicks. and *J. porphyrolenca* aut., and can only regard the latter as a variety or local-form. Most of the Færøese specimens may be referred to the latter.

64. *J. orcadensis* Hook.

B., Nw. (Atl., suba.). — Fær., not rare. Amongst other mosses on the ground near streams, in shady cavities amongst larger stones, in *Grimmia*-heaths on the summits of mountains. Only barren. Sandö: Skorene (!). Vaagö: Rensatinder, ab. 300 m. (!). Str.: Near Nordredal (!); summit of Skjællingfjæld (R., !); below Örvessfjæld (!). Öst.: Eastern declivity of Trelavandsskardet; near Bredaskard (!); Rejafjæld, ab. 450 m. (O); summit of Slattaratinde (R., !). Kalsö: Summit of Blankeskaalefjæld (J. H.).

65. *J. socia* Nees.

B., Nw. (c.). — Fær., very rare. Amongst mosses and lichens on the ground and on exposed rocks. Syd.: Near Vaag, barren and gemmiparous (!). Str.: Near Thorshavn, with colesula and gemmæ (J. H.).

66. *J. incisa* Schrad.

B., Nw. (c.). — Fær., not frequent. On prostrate *Sphagnum*-tufts in wet places. Barren. Syd.: Near Örnefjæld, 300 m. (!). Sandö: Skorene (!). Str.: Gliversrejn (R., !); between Thorshavn and Hvidenæs; Saxendalen (!). Öst.: Near Bredaskard (!). Bordö: Gjerdumrejn, 400 m. (O.).

67. *J. Floerkei* W. M.

B., I., Nw. (c., suba.). — Fær., common. Amongst mosses and lichens on the ground and on exposed rocks, from ab. 200 m. to the summits of mountains. Only barren. First discovered by Lb. Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

68. *J. lycopodioides* Wallr.

B., I., Nw. (c., suba.). — Fær., not rare. On moist ground amongst other mosses, from ab. 200 m. upwards, sometimes to the summits of mountains. Only barren. Syd.: Spinerne; Kvannefjæld; Præstefjæld (!). Sandö: Summit of Tinden (!). Hestö (R.). Vaagö: Near Midvaag (!). Nolsö (J. H.). Öst.: Stölafjæld; eastern declivity of Trelavandsskardet; near Bredaskard; near Ejde; near the summit of Slattaratinde (!). Bordö: Aærne; above Strand, 350 m. (!).

69. *J. barbata* Schmid., *J. barbata* var. *Schreberi* Nees.

B., I., Nw. (c.). — Fær., very rare. On moist ground in sunny situations. Syd.: Eastern declivity of Præstefjæld near Kvalbø, amongst mosses and grass, ab. 160 m., barren (!)

70. *J. atlantica* Kaalaas.

Nw. (Atl.). — Fær., very rare. On the ground amongst other mosses. Öst.: Western declivity of Fuglefjordskamp, 220 m., sparingly and barren (!).

This moss is the *Jungermania gracilis* Schleich., but without attenuated branches, and therefore it may be referred to the above-named, possibly somewhat doubtful species. (Videnskabselsk. Skrifter, Christiania, 1898, Nr. 9, p. 11).

71. J. quinquedentata Huds.

B., I., Nw. (c., suba.). — Fær., common. On the ground, on stones and rocks, amongst mosses and lichens, from the sea-shore to the summits of mountains. Fr. rare. First discovered by R. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Var. turgida Lindb.

Öst.: Eastern declivity of Trelavandsskardet, on boggy ground, amongst other mosses, ♂ (!).

The collective-species »*Jungermannia barbata*« is notified by T.; »*Jungermannia tridentata*«, acc. to T. found by Lb., may probably be referred to *J. quinquedentata*.

72. J. ovata Dicks., *J. Dicksoni* Hook.

B., Nw. (Atl.). — Fær., rare. On stones and exposed rocks amongst mosses and lichens, in low-lying parts of the isles. Only barren. Syd.: Høve Dalen (J. H.). Hestö (R.). Str.: Gliversrejn and Gliversnæs (R.), Varden near Thorshavn (J. H.). Öst.: At Toftevatn (O.).

»*Jungermannia minuta*« is notified by T.

73. J. Donniana Hook.

B., Nw. (Atl., suba.). — Fær., very rare. Str.: Near Nordredal, on the eastern declivities of the mountain Stigafjæld, covering large stones in a shady place, associated with *Grimmia hypnoides*, *Jamesoniella Carringtonii*, *Jungermania orcadensis*, *Martinellia planifolia*, etc., 420 m., barren (!).

74. Jamesoniella Carringtonii (Balf.) Spruc., *Nardia Carringtonii* Balf., *Adelanthus Carringtonii* Balf.

B. (Atl., suba.). — Fær., rare. On wet ground, moist shady rocks and larger stones, pure or associated with other mosses, from ab. 250—500 m. Only barren. Syd.: Summit of Kvannefjæld; northern declivity of Örnefjæld (!). Sandö: Skorene (!). Vaagö: Rensatinder; Thormansgjov (!). Str.: Eastern declivity of Stigafjæld; between Nordredal and Örengø; below Örvesfjæld (!).

75. Nardia crenulata (Sm.) Lindb., *Jungermania crenulata* Sm.

B., I., Nw. (w.c.). — Fær., rare. On moist ground near the sea. Syd.: Not rare around Trangisvaagfjord, also fr. (!). Sandö: Todnæs (!). Vaagö: Midvaag (!). Str.: Hvidenæs and Thorshavn (!). Nolsö (R.). Öst.: Near Ejde, fr. (!). Bordö: Near Aærne, fr. (!).

76. N. hyalina (Lyell.) Lindb., *Jungermania hyalina* Lyell. Hook.

B., Nw. (w.c.). — Fær., rare. On the ground among rocks near streams, in low-lying parts of the isles. Vaagö: East side of the island, ♂ (!). Str.: Vestmanhavngjov, ♂ (!). Öst.: Fuglefjord, fr.; near Gjov, barren (!).

77. **N. obovata** (Nees) Lindb., *Jungermania obovata* Nees.

B., Nw. (w. c., suba.). — Fær., common. On moist ground in crevices of rocks, on banks of streams, from the sea-shore to the higher parts of the mountains. In low-lying parts often fruiting abundantly, in higher parts generally barren. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Very variable in size and colour, green forms are scarce, more or less purplish-brown forms frequent. Near the coast the small forms — fruiting abundantly during spring — are frequent in crevices and on the ground among rocks. In the mountains the plants gradually become stouter in size and habit, but less abundant in fruit, until they above 300—400 m. form large, deep, dark purplish-brown, barren tufts in rills and round springs.

78. **N. subelliptica** Lindb.

Nw. (alp. arct.?). — Fær., very rare. On the ground. Syd.: Trangisvaag, on ditchbanks, few metre above sea-level, fr. abundantly (!). Str.: Skjællingfjæld, on the southern, grassy declivity of the mountain, ab. 250 m., with colesula (!).

The specimens differ only from the common, small form of *N. obovata* in their pale-green colour and whitish rootlets, but agrees perfectly with a specimen kindly sent to me by Professor Loitlesberger, who gathered it on silicious rocks in Vorarlberg (Tyrol).

79. **N. scalaris** (Schrad., Hook.) Lindb., *Alicularia scalaris* Cord.

B., I., Nw. (w. c.). — Fær., common. On the ground, in pure patches or associated with other mosses, from sea-level to the summits of mountains. Fr. frequently. First discovered by T. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

80. **N. hæmatosticta** (Nees) Lindb., *Alicularia geoscypha* De N., *A. minor* Limpr.

B., I., Nw. (w. c.). — Fær., rare. On the ground, in low-lying parts of the isles. Fr. usually. Syd.: Sumbö, 200 m.; below Örnefjæld; Præstefjæld, 160 m. (!). Vaagö: Rensatinder (!). Myggenæs: Kolvadal (!). Öst.: Stölafjæld (!).

81. **Marsupella emarginata** (Ehrh.) Dum., *Sarcoscyphus Ehrhartii* Cord., *S. emarginatus* Hartm., *Nardia emarginata* Lindb.

B., I., Nw. (w. c., suba.). — Fær., very common. On wet ground, on stones and rocks by streams and rills, from the sea-shore to the summits of mountains. Fr. not rare, especially in low-lying parts. According to H. found in Fær. by Lb., but specimens are wanting in the collections. Recorded by T. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

Very variable in size and colour. The most characteristic forms are: —

Var. *aquatica* Nees.

Str.: Gliversrejn (R.); between Nordredal and Öreenge (!). Öst.: Götegvig (!). Bordö: Graverdal near Bordövig (!).

Var. *minor* Carr.

Syd.: Near Famienvatn, fr.; below Örnefjæld, fr.; near Trangisvaag, fr. (!) summit of Örnefjæld (R.). Vaagö: Midvaag; Rensatinder; Snaldansfjæld (!). Myggenæs, ♀ (!). Str.: Kirkebörejn (R.); Gliversrejn; Gjoverbotn near Kvivig, fr. (!). Bordö: Graverdal near Bordövig, 400 m. (!).

82. *M. sparcifolia* Lindb., *Sarcoscyphus sparcifolius* Lindb., *Nardia sparcifolia* Lindb.

B., Nw. (w. c., alp. arct.). — Fær., very rare. Sandö: Summit of Tinden, ab. 500 m., on the ground among rocks, fr. (!).

83. *M. Funckii* (W. M.) Lindb., *Sarcoscyphus Funckii* Nees, *Nardia Funckii* Carr.

B., Nw. (w. c.). — Fær., very rare. On moist ground. Vaagö: At the northern end of Sörvaagsvatn, covering the ground abundantly in great patches, fr. (!).

84. *Cesia corallioides* (Nees) Carruth., *Gymnomitrium corallioides* Nees.

B., L., Nw. (alp. arct.). — Fær., rare. On the ground among rocks in the highest parts of the mountains. Only barren. Syd.: Kvannefjæld (!). Sandö: Summit of Tinden (!). Str.: Between Nordredal and Öreenge (!). Öst.: Summit of Rejafjældstinde (O.); Stölafljæld; Grönaskardskil (!). Bordö: Graverdal at Bordövig (!) summit of Holgafjæld (O). Viderö: Malinsfjæld (O).

85. *C. concinnata* (Lightf.) Gr., *Gymnomitrium concinnatum* Cord.

B., L., Nw. (w. c., alp. arct.). — Fær., not rare. On moist ground among rocks and in crevices of rocks, below 300 m. very rare, from 300 m. to the summits not rare. Sometimes fr. Syd.: Sumböfjæld; Kvannefjæld (!). Sandö: Summit of Tinden (!). Vaagö: Rensatinder, fr. (R., !); Snaldansfjæld (!). Myggenæs: Near the summit of Klejven (!). Str.: Summit of Skjellingfjæld (Lb., !); between Nordredal and Öreenge (!). Öst.: Summit of Rejafjældstinde (O.); Götegvig, 5 m.; Stölafljæld; between Skaalebotn and Andefjord, fr.; between Götegvig and Fuglefjord; Slattaratinde, fr. (!). Kalsö: Summit of Blankeskaalefjæld, fr. (J. H.). Kunöfjæld (O.).

86. *Metzgeria hamata* Lindb.

B. (Atl.). — Fær., very rare. On damp, shady rocks in clefts. Only barren. Öst.: Götegvig, 5 m. (!). Bordö: Above Strand, 315 m. (!).

87. *M. conjugata* Lindb.

B., Nw. (c., suba.). — Fær., not frequent. On damp, shady rocks, rare on the ground, in low-lying parts. Only barren. Syd.: Vaag (!); Ördevig (R.); at Famienvatn; near Trangisvaag; at Norbes Ejde near Kvalbø (!). Sandö: Between Sand and Skaalevig (!). Hestö (R). Vaagö: Thormansgjov; above Vigum, on the ground (!). Str.; Gjoverbotn and Lejnumvatn near Kvivig; Vestmanhavngjov (!). Öst.: Götegjov (!). Kalsö: At Sydredal (J. H.).

88. *M. furcata* (L.) Dum.

B., I., Nw. (c.). — Fær., not frequent. On rocks and larger stones, in low-lying parts of the isles. Only barren. Recorded by H. and T. Syd.: Vaag (!); Hovedalen (J. H.); Ördevig; below Örnefjæld; Præstefjæld; at Norbes Ejde near Kvalbø (!). St. Dimon (!). Sandö: At Saltvigsvatn; between Sand and Skopen (!). Vaagö (R.). Nolsö: The east side (O.). Öst.: Næs (R.); near Ejde; Funding (!). Bordö: At Bordövig (O.).

Var. *aeruginosa* Nees.

Nolsö: The east side, on stones (O.).

89. *Riccardia multifida* (L.) Gr., *Aneura multifida* Dum.

B., I., Nw. (w. c.). — Fær., not frequent. Amongst other mosses on moist ground and in crevices of rocks, below 300 m. Only barren. Syd.: Vaag; at Famienvatn; below Örnefjæld; Kvanhaugen; Præstefjæld (!). Sandö: At Holsavatn (!). Vaagö: (R., !); Thormansgjov; at Kvilehina-vatn (!). Myggenæs (!). Str.: Gliversrejn (!); Thorshavn (R.); Gjoverbotn near Kvivig (!); Kalbakbotn (S.). Öst.: Götegjov; near Fuglefjord; at Trelavandsskardet; between Skaalebotn and Andefjord; near Ejde (!). Bordö: Above Strand, 300 m. (!).

90. *R. latifrons* Lindb., *Aneura latifrons* Lindb.

B., Nw. (c.). — Fær., frequent. On moist ground amongst other mosses, from the sea to above 550 m. Only barren. First discovered by R. Jensen. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

91. *R. pinguis* (L.) Gr., *Aneura pinguis* Dum.

B., I., Nw. (c.). — Fær., common. On wet or boggy ground, often amongst other mosses, common in low-lying parts, rare above 300 m. Fr. rare. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

All the Færøese specimens I have met with, agree in having a more or less narrow, scarcely divided, somewhat thin and slender frond, and therefore may be referred to the two forms *tenuis* and *denticulata* Nees.

92. *Pallavicinia Blyttii* (Mørch) Lindb., *Jungermania Blyttii* Mørch, *Blyttia Mørchii* Syn. Hep., *Morchia Blyttii* Brockm. Hartm.

I., Nw. (alp. arct.). — Fær., very rare. On moist ground in higher parts of the mountains. Str.: Between Nordredal and Öreng, 500 m., barren (!). Öst.: Grönaskardskil between Skaalebotn and Andefjord, 480 m., fr. (!).

93. *Blasia pusilla* L.

B., I., Nw. (c.). — Fær., very rare. On moist, partly cultivated ground, near the sea. Syd.: Lopra, ♂ (!).

94. *Pellia Neesiana* Limpr., *Marsilia Neesii* Lindb.

B., I., Nw. (c.). — Fær., very common. In moist and boggy places, especially by streams and rills, from the sea-shore to ab. 500 m. Fr. rare. First discovered by R. Syd.; St. Dimon; Sandö; Hestö; Myggenæs; Str.; Öst.; Bordö.

95. *P. epiphylla* (L.) Nees.

B., I., Nw. (c.). — Fær., rare. On moist ground, below 300 m. Syd.: Vaag; below Örnefjæld, fr.; at Trangisvaag (!). Hestö (R). Str. (F.B.). Nolsö (R.). Öst.: Near Fuglefjord (!).

Recorded as »*Jungermannia epiphylla*« by T.

Sphagnaceae.

96. *Sphagnum imbricatum* Russ., *S. Austini* Sulliv.

B., Nw. (c.). — Fær., very rare. On wet ground, from 200—450 m. Only barren. Öst.: In four places in the group of mountains between Götevig and Andefjord.

97. *S. cymbifolium* Ehrh.

B., I., Nw. (c.). — Fær., not frequent. On peaty ground, below 300 m. Only barren. Syd.: Near Suubö; near Famien; below Örnefjæld (!); Frodebö (R.); Kvanhaugen (O); Prästefjæld near Kvalbö (!). Sandö: Skorene; near Skopen (!). Str.: Vestmanhavngjov (!). Öst.: Near Nordre-Göte; between Skaalebotn and Andefjord (!). Bordö: Skorene at Gjerdumrejn (O.).

98. *S. papillosum* Lindb.

B., I., Nw. (w.c.). — Fær., frequent. On moist, peaty ground, below 400 m. Fr. rare. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

Var. *sublaevis* Limpr.

Syd.: Frodebö (!).

99. *S. centrale* C. J., *S. intermedium* Russ.

Nw. (c., suba.). — Fær., very rare. On moist ground. Öst.: Stöla-fjæld; near Ejde (!).

The collective-species *Sphagnum obtusifolium* is recorded by T. and H.

100. *S. teres* Ångst.

B., I., Nw. (c.). — Fær., frequent. On peaty ground, from ab. 100—500 m. Fr. rare. Fær., fr. (Lb.). Syd.: Near Tværaa and Trangisvaag; Kvanhaugen; Prästefjæld (!). Sandö: Near Skopen; at Holsavatn;

Knejsen (!). Vaagö: Midvaag (!). Str.: Near Kalbakbotn; frequent between Nordredal and Öreunge; southern declivities of Skjællingfjæld; below Örvesfjæld (!). Öst.: In several places (!). Bordö: Klakken; above Strand (!).

101. *S. squarrosus* Crome.

B., l., Nw. (c.). — Fær., not frequent. On moist ground from ab. 100 m. nearly to the summits of mountains. Always sparingly and barren. Syd.: Præstefjæld (!). Vaagö: Midvaag; Rensatinder; at Kvilchinavatn (!). Str.: Near Nordredal; near Lejnumvatn (L., !); below Örvesfjæld (!). Öst.: In several places (!).

Simmons (7) states that he has gathered the *Sph. rigidum* Sch. in Öst. (Slattaratinde), but I did not succede in getting any specimens for examination.

102. *S. subsecundum* Nees.

B., Nw. (c.).

After an examination of all the forms of *S. subsecundum* in my possession I can only come to the conclusion that the species described by Russow and Warnstorf and derived from the old *S. subsecundum* cannot be maintained, or at the most can only be regarded as varieties. However valuable the situation of leaf-pores is in separating species in the *Cuspidatum*-group, this character in the *Subsecundum*-group is insufficient on account of the absence of other reliable characters which are present in the species of the *Cuspidatum*-group. One may have a presentiment of the appearance of new species from the *S. subsecundum*, but as yet there appears to be too insignificant differentiation. Because of the great number of forms it is, however, necessary to classify them, and with regard to this the situation of pores in branch- as well as in stem-leaves may be relevant.

- A. Most pores in the outer side of branch-leaves and in the inner side of stem-leaves; var. *inundatum* (Russ.) m.
- B. Most pores in the inner side of branch- as of stem-leaves; var. *crassycladum* (Warnst.) m.
- C. Most pores in the outer side of branch- as of stem-leaves; var. *Gravetii* (Russ.) m.
- D. Most pores in the inner side of branch-leaves and in the outer side of stem-leaves. This alternation is represented in my collection by a specimen gathered by F. Gravet in the neighbourhood of Namur, and is doubtless the rarest. I have named it var. *namurense* v. n.

The poorly pored forms of these varieties constitute the *Sphagnum obesum* Warnst.

The typical form has not hitherto been met with in Fær.

Var. **inundatum** (Russ.) m.

Frequent in boggy places. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

Var. **crassieladum** (Warnst.) m.

Rare, in deep water. Only barren. Syd.: Vaag (!). Str.: Gliversrejn and Varden near Thorshavn (R); Hvidenæs; Gjoverbotn near Kvivig (!).

Var. **Gravetii** (Russ.) m.

Common on wet or boggy ground. Only barren. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

103. **S. Russowii** Warnst.

B., Nw. (c.). — Fær., very rare. On wet, mossy declivities. Only barren. Öst.: Stöla fjæld, near the summit, 500 m.; Trelavandsskardet, 300 m. (!).

104. **S. fuscum** (Schimpr.) Klinggr.

B., Nw. (c.). — Fær., very rare. On wet or boggy ground, from 200 m. to 450 m. Only barren. Str.: Below Örvess fjæld, 450 m.; Saxendalen, ab. 200 m. (!). Öst.: Near Bredaskard, 430 m. (!).

105. **S. rubellum** Wils.¹, **S. lenellum** (Schimpr.) Klinggr.

B., I., Nw. (w. c.). — Fær., common. Wet or boggy places, from 100 m. to ab. 500 m. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

106. **S. Warnstorffii** Russ.

B., I., Nw. (w. c.?). — Fær., very rare. On wet ground. Öst.: Stöla fjæld, ab. 400 m. (!). Bordö: Above Strand, 800 m. (!).

107. **S. quinquefarium** (Braithw.) Warnst.

B., Nw. (w. c., suba.). — Fær., frequent. On moist ground, on mossy banks and declivities, from low-lying parts to ab. 500 m. Only barren. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö; Viderö.

Very variable in size and colour, and usually of a softer habit than most of the continental forms which I have seen.

¹ I do not understand on what grounds my friend Warnstorf continually names this species *Sphagnum lenellum*, since that name in 1826 was already given to another species. In 1892 he himself admitted to me, that there is no imperative reason for preferring the name *tenellum* to that of the older *rubellum*.

108. **S. subnitens** Russ. et Warnst.

B., I., Nw. (w. c.). — Fær., very common. On wet or spongy ground, from the sea-shore to ab. 500 m. Fr. frequent. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

The »*Sphagnum acutifolium*«, recorded by T. and H., may probably be referred to *Sph. subnitens*.

109. **S. tenellum** Pers., *S. molluscum* Br.

B., Nw. (c.). — Fær., frequent. On wet or spongy ground, from low-lying parts to ab. 500 m. Fr. rare. First discovered by R. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

110. **S. recurvum** P. B., Subspec. *S. mucronatum* Russ.

B., Nw. (c.). — Fær., rare. On wet ground, from ab. 200 m. to 500 m. Only barren. Str.: In several places between Thorshavn, Nordredal and Kollefjord; below Örvessjæld (!). Öst.: Stölafljæld; near Nordre-Göte; eastern declivities of Trelavandsskardet; near Bredaskard; between Skaalebotn and Andefjord (!).

Subspec. **S. amblyphyllum** Russ.

Fær., very rare. On boggy ground. Sandö: Between Sand and Skaalevig, ab. 300 m. above sea-level, barren (!).

Subspec. **S. angustifolium** C. J., *S. recurvum* β . *tenue* Klinggr. (1872), *S. recurvum* var. *parvifolium* (Sendtn.) Warnst. (1883).

Fær., not rare. On wet ground. Only barren. Syd.: Near Famién (!). Sandö; Tindesjæld; near Skopen (!). Vaagö: Rensatinder, 350 m.; between Sörvaagsvatn and Fjatlavatt (!). Str.: In several places between Thorshavn, Nordredal and Kollefjord; below Örvessjæld (!). Öst.: Near Fuglefjord and Bredaskard; near Ejde, ab. 300 m. (!). Bordö: Above Strand, ab. 300 m. (!).

Musci frondosi.**Acrocarpi.**111. **Polytrichum commune** L.

B., I., Nw. (c.). — Fær., frequent. On wet or boggy ground, from low-lying parts to ab. 400 m. Fr. not rare. Notified by Landt. Gathered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

112. **P. juniperinum** Willd.

B., I., Nw. (c.). — Fær., not frequent. On somewhat dry ground, below 300 m. Fr. rare. According to T. found by Lb., specimens are wanting. Syd.: Ördavig; below Örnefljæld (!). St. Dimon (!). Sandö: Near Trödum, on a roof; Todnæs (!). Vaagö: Rensatinder (!). Str.: Thorshavn, fr. (!). Nolsö: fr. (R.); the east side (O.). Öst.: Near Ejde (!).

113. *P. piliferum* Schreb.

B., I., Nw. (c.). — Fær., frequent. On somewhat dry ground, from low-lying parts to ab. 600 m. Fr. not rare. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Nordreöer.

114. *P. attenuatum* Menz., *P. formosum* Hedw.

B., I., Nw. (c.). — Fær., rare. On moist ground below 300 m. Syd.: Örnefjæld, ♂; at Trangisvaag; near Tværaa (!). Str.: Varden near Thorshavn, fr. (R.); Kvivig, fr. (Lb.). Öst.: Near Ejde, fr. (!). Bordö: Klakken, ♂ (!).

115. *P. sexangulare* Flörk.

B., I., Nw. (alp. arct.). — Fær., very rare and only barren. Öst.: Grönaskardskil between Skaalebotn and Andefjord, 480 m., on moist ground, associated with *Pallavicinia Blyttii*, *Salix herbacea* and *Sibaldia procumbens* (!).

116. *P. alpinum* L., *Pogonatum alpinum* Röhl.

B., I., Nw. (c., suba.). — Fær., very common. On the ground from the sea-level to the summits of the highest mountains. Fr. common. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Var. *septentrionale* (Sw.) Lindb., *Polytrichum septentrionale* Sw.

I., Nw. (alp. arct.). — Fær., very common. Recorded by T. Mentioned by H. who, however, does not give the name of the discoverer. Öst.: Grönaskardskil between Skaalebotn and Andefjord, 480 m., on moist ground, sparingly amongst other mosses, but fr. (!).

117. *P. urnigerum* L., *Pogonatum urnigerum* P. B.

B., I., Nw. (c.). — Fær., frequent. On somewhat dry ground, from the sea-shore to the summits of mountains. Fr. rare. First discovered by Lb. Syd.; St. Dimon; Sandö; Vaagö; Nolsö; Öst.; Nordreöer.

118. *P. nanum* Weiss, *Pogonatum aloides* P. B.

B., I., Nw. (c.). — On the ground, especially when cultivated, where it is common on the ditch-sides in low-lying parts of the isles. Fr. common. First discovered by Landt. Syd.; Sandö; Vaagö; Str.; Öst.; Nordreöer.

The var. »*Dicksoni*« is notified by T.

119. *P. subrotundum* Huds., *Pogonatum nanum* P. B.

B., I., Nw. (w. c.). — Fær., common. On the ground, rare in cultivated parts, from the sea to the summits of mountains. Fr. common. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

120. *Oligotrichum incurvum* (Huds.) Lindb., *O. hercynicum* Lam. et De C.

B., I., Nw. (c., suba.). — Fær., frequent. On uncultivated ground, from ab. 100 m. to the summits of mountains. Fr. not rare. Syd.:

Kvannefjæld; Örnefjæld; near Trangisvaag; Præstefjæld (!). Sandö (R.). Vaagö: Rensatinder; Snaldansfjæld (!). Str.: Gliversrejn; between Nordredal and Öreenge; summit of Skjællingfjæld; near Kvivig; below Örvesfjæld (!). Nølsö (R.). Öst.: Summit of Rejalfjældstinde (O); Stölafjæld; Fuglefjord, 10 m.; between Skaalebotn and Andefjord; near Gjøv; between Funding and Ejde; Slattaratinde; near Ejde (!). Bordö: Klakken; Graverdal near Bordövig, 10 m. (!).

121. *Catharinea undulata* (L.) W. M., *Atrichum undulatum* P. B.

B., I., Nw. (c.). — Fær., not rare. Amongst moss and grass on cultivated and uncultivated ground below 350 m. Fr. frequent. Syd.: Vaag; near Hove; Örnefjæld; Trangisvaag; Frodebö; Kvalbö (!). Sandö: Sands Bö (!). Vaagö: Midvaag (!). Myggenæs (!). Str.: Thorshavn; near Lejnumvatn (!). Öst.: Ejde; Gjøv (!). Bordö: Gjerdum; near Aærne (!).

122. *Fissidens adianthoides* (L.) Hedw., *Schistophyllum adianthoides* La Pyl.

B., I., Nw. (c. w.). — Fær., not rare. On peaty ground and in crevices of rocks, below 300 m. Fr. not rare. Syd.: Sumbö; Vaag, fr.; at Famienvatn, fr.; Kvanhaugen; Præstefjæld near Kvalbö (!). Sandö: Between Sand and Skopen (!). Vaagö: Midvaag, fr. (!). Str.: At Kalbakfjord (Lb.); Öreenge; Skjællingfjæld; Gjoverbotn near Kvivig (!). Öst.: fr. (R.); Svinaa, fr. (!); near Ejde, fr.; environs of Skaalefjord and Göte (!). Bordö: Graverdal (!).

123. *F. cristatus* Wils., *F. decipiens* De N., *Schistophyllum decipiens* Lindb.

B., Nw. (c.). — Fær., not rare. On the ground among stones and rocks, from the sea-shore to the summits of mountains, rare above 200 m. Only barren. Syd.: Vaag; at Famienvatn; below Örnefjæld (!). Vaagö: Rensatinder, to ab. 700 m.; at Kvilchinavatn (!). Myggenæs (!). Str.: (F. B.); Vestmanhavngjøv (R., !). Öst.: Svinaa (O.); Götegjøv (!). Bordö: Near Aærne and Strand (!).

124. *F. taxifolius* (L.) Hedw., *Schistophyllum taxifolium* La Pyl.

B., I., Nw. (c.). — Fær., not rare. On the ground, among stones and rocks, in crevices of rocks, in low-lying parts to ab. 300 m. Fr. rare. Notified by T. Syd.: Vaag; near Famiën; near Ördevig; below Örnefjæld; Kvanhaugen (!). Sandö: At Saltvigsvatn (!). Vaagö: Midvaag (!). Str.: Thorshavn; Gliversrejn; Skjællingfjæld; Lejnumvatn; Vestmanhavngjøv; Saxendalen (!). Nølsö (R.). Öst.: fr. (R.); environs of Skaalefjord, Götevig and Fuglefjord; Gjøv; Ejde (!).

125. *F. osmundioides* (Sw.) Hedw., *Schistophyllum osmundioides* La Pyl.

B., I., Nw. (c.). — Fær., frequent. On moist ground, in crevices of rocks, from the sea-shore to ab. 400 m. Fr. rare. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

»*Dicranum bryoides*« is recorded from Fær. by T. and *Cinclidium stygium* by Kindberg.

126. ***Astrophyllum punctatum* (L.) Lindb., *Mnium punctatum* L.**

B., I., Nw. (c.). — Fær., common. On wet ground amongst other mosses, by rills and springs and on banks of streams, from the sea-shore to the summits of mountains. Fr. rare. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

127. ***A. undulatum* (L.) Lindb., *Mnium undulatum* Weiss, *Bryum ligulatum* Schreb.**

B., Nw. (c.). — Fær., frequent. On mossy and grassy, moist ground; rare above 300 m. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Most of the Færöese specimens are short and without dendroid ramification, the leaves are suberect, shorter and less undulate, accordingly the plants resemble in habit fertile shoots of *A. silvaticum*.

Var. ***cuspidatum* v. n.**

Stem slightly divided or simple, leaves somewhat narrow and gradually acuminate.

Syd.: Kvanhaugen, barren (!).

128. ***A. cuspidatum* (L., Neck.) Lindb., *Mnium affine* Bland.**

B., I., Nw. (c.). — Fær., very rare. On moist sandy or gravelly ground. Only barren. Sandö: Near Trødum (!). Myggenæs: Kortadal (!).

Var. ***integrifolium* Lindb.**

I. — Fær., very rare. In boggy places and on wet ground, among rocks. Sandö: Trødum-Bö (!). Nolsö (F. B.).

129. ***A. medium* (Br. eur.) Lindb., *Mnium medium* Br. eur.**

Nw. (c., suba.). — Fær., very rare. Öst.: Slattaratinde, on wet ground below a vertical wall of rock with northern aspect, ab. 500 m. above sea-level, barren (!).

130. ***A. silvaticum* Lindb., *Mnium cuspidatum* Hedw.**

B., I., Nw. (c.). — Fær., very rare. Sandö: Near Trødum, on partly cultivated, sandy ground near the sea, fr. (!).

131. ***A. stellare* (Reich., Timm.) Lindb., *Mnium stellare* Hedw.**

B., Nw. (c.). — Fær., very rare. Syd.: Near Trangisvaag, on moist rocks in a cleft with southern aspect ab. 200 m. above sea-level, barren (!).

132. ***A. hornum* (L.) Lindb., *Mnium hornum* L.**

B., I., Nw. (w. c.). — Fær., very common. On moist ground from the sea-shore to the summits of mountains. Fr. not rare. Notified by T. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bördö.

133. **A. orthorrhynchum** (Br. eur.) Lindb., *Mnium orthorrhynchum* Br. eur.

B., I., Nw. (c., suba.). — Fær., very rare. On moist rocks in clefts. Only barren. Syd.: Near Trangisvaag, in a cleft with southern aspect, ab. 200 m. (!). Öst.: Stölafljæld; Götegjov; eastern declivity of Trelavands-skardet (!). Kunnö, ab. 400 m. (J. H.).

134. **Gymnocybe palustris** (L.) Fries, *Aulacomnium palustre* Schw., *Sphaerocephalus palustris* Lindb.

B., I., Nw. (c.). — Fær., common. On wet or boggy ground, from the lower parts to ab. 400 m. Fr. rare. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

135. **G. turgida** (Wahlenb.) Lindb., *Aulacomnium turgidum* Schw., *Sphaerocephalus turgidus* Lindb.

B., I., Nw. (alp. arct.). — Fær., frequent. In pure cushions or amongst other mosses, on moist turfy or gravelly ground in higher parts of the mountains, rare in lower parts as far down as ab. 100 m. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

R. records a Færöese »?*Catoscopium nigratum* (Hedw.) Brid.«, but no specimen has been met with in the collections.

136. **Breutelia chrysocoma** (Dicks.) Lindb., *B. arcuata* Schimp.

B., Nw. (Atl.). — Fær., common. On moist or somewhat dry ground, in pure cushions or usually associated with other mosses, especially *Hylocomia*, from the sea-shore to ab. 400 m. Only barren. First discovered by R. and R. Jensen. Syd.; Sandö; Hestö; Vaagö; Str.; Öst.; Bordö.

137. **Philonotis fontana** (L.) Brid.

B., I., Nw. (c.). — Fær., very common. On wet or boggy ground, round springs, in rills and by streams, from the sea-shore to ab. 500 m. Fr. frequent. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Somewhat variable in size, density of the tufts, ramification, direction of the leaves, etc.

Var. **compacta** Schimp.

Str.: At Lejnumvatn, barren (!). Öst.: Slattaratinde, barren (R., !).

138. **P. capillaris** Lindb.

B., I., Nw. (c.). — Fær., very rare. In cultivated, turfy and sandy soil near the coast. Syd.: Trangisvaag, on ditch-banks, barren (!).

139. **P. Ryani** Philib. (Plate III.)

Nw. (Atl., suba.). — Fær., very rare. On moist ground in clefts of rock in low-lying parts. Str.: Vestmanhavngjov, ♂ and fr. (!). Nolsö, ♀ barren (R.). Öst.: ?Götegjov, barren (!).

Dioicous. Very gracile, tomentous below; leaves uniform, somewhat divergent, shortly decurrent, lanceolate-subulate, margins plane, simply toothed; cells below shortly rectangular, above in the narrow part linear and often faintly curved, only in the upper end mamillar. Male inflor. discoid, bracts from an erect, broadly ovate base lanceolate, acute, the upper half very divergent, nerve narrow and distinct, vanishing in the point; antheridia ab. 0,49 mm. long. Female inflor. surrounded by several branches. Perichaetial bracts from a short and broad base somewhat suddenly subulate, subula twice as long as the broad base, sharply toothed. Seta long (ab. 30 mm.), slender, purplish-brown. Capsule inclined, ovato-globose, pachydermous, with reddish-brown mouth, when dry curved and sulcate. Lid small, conic, pale reddish-brown, mamillar. Teeth of exostome reddish-brown, minutely papillose, with ab. 25 lamellae; between the upper lamellae, somewhat below apex, with ovate, nearest to apex round thickenings; endostome orange, processes grossy papillose, without lacunes, with 2 shorter, minutely papillose cilia. Spores finally papillose, 0,015—0,018 mm. diameter.

140. **P. seriata** Mitt.

B., Nw. (c., suba.). — Fær., very rare. Str.: Near Nordredal, round a spring, barren and associated with *Marchantia polymorpha* and *Pellia Neesiana* (!).

141. **Bartramia ityphylla** Brid.

B., l., Nw. (c.). — Fær., common. In crevices of rocks, from the sea-shore to the summits of mountains. Fr. common. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst; Nordreöer.

142. **B. pomiformis** (L.) Hedw.

B., Nw. (c., suba.). — Fær., rare. In crevices of rocks in low-lying parts. Always fr. Notified by T. Syd.; In several places (!). Str.: Vestmanhavngjov (!). Öst.: Götegvjov (!).

Var. **crispa** (Sw.) Braithw.

Vaagö (R.). Str.: Vestmanhavngjov (!). Öst.: (R.); Götegvjov (!).

According to T. the «*Bartramia gracilis*» has been found in Fær. by Lb., but no specimen has been met with in the collections.

143. **Conostomum boreale** Sw., *C. tetragonum* Lindb.

B., l., Nw. (alp. arct.). — Fær., frequent. On moist gravelly ground in higher parts of the mountains. Fr. rare. Syd.: Sumbölfjæld, Kvannefjæld, Mannaskard near Trangisvaag and the mountain between Trangisvaag and Kvalbö (!). Sandö: Summit of Knejsen (!). Vaagö: Summit

of Malinstinde, fr. (Lb.); Rensatinder, 300—700 m.; Snaldansfjæld (!). Myggenæs: Summit of Klejven (!). Str.: Between Öreenge and Nordredal, fr. (!); Skjællingfjæld (Lb., R., !); below Örvesfjæld, fr. (!). Öst.: Stölafjæld; between Skaalebotn and Andefjord, 250—500 m., fr.; Slattaratinde, 550 m. to the summit (!).

144. *Bryum capillare* L.

B., L., Nw. (c.). — Fær., frequent. On rocks and larger stones, in crevices of rocks, in low-lying parts of the isles. Fr. rare. First discovered by R. Syd.; Sandö; Vaagö (fr.); Str.; Öst.; Bordö.

145. *B. elegans* Nees.

B., L., Nw. (c.). — Fær., not rare. On rocks and larger stones, on the ground among rocks, in low-lying parts. Only barren. Syd.: Hovedalen (J. H.). St. Dimon (!). Vaagö: Shore of Sörvaagsvatn (J. H.). Myggenæs (!). Str.: Near Thorshavn (R., !). Öst.: At Toftevatn (J. H.).

146. *B. ventricosum* Dicks., *B. pseudotriquetrum* Schwægr.

B., L., Nw. (c.). — Fær., common. On wet or boggy ground, round springs and by rills, from the sea-shore to ab. 500 m. Fr. not rare. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Nordreöer.

Very variable in size and colour, density of the tufts, etc. The most remarkable variety is: —

Var. *atlantica* v. n.

In stout, dense, more or less purple cushions; leaves large (until 3,5 mm. long and 1,2—1,3 mm. broad), somewhat concave, with thick, reddish, usually shortly excurrent and here somewhat toothed nerve, margins reflexed, with a yellow border of 10—12 narrow cells.

In similar places as the type, common. Fr. rare. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

147. *B. pallens* Sw.

B., L., Nw. (c.). — Fær., frequent in low-lying parts of the isles, rare in higher parts of the mountains. On moist ground, especially when cultivated. Fr. not rare. First discovered by O. Syd.; St. Dimon; Sandö; Vaagö; Str.; Öst.; Bordö.

148. *B. alpinum* Huds.

B., Nw. (c., suba.). — Fær., frequent. On moist rocks, from the sea-shore to ab. 300 m. Fr. rare. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Var. *viridis* Husn.

Sandö: At Grothusvatn (!).

149. *B. erythrocarpon* Schwægr.

B., Nw. (w. c.). — Fær., very rare. On sandy ground. Sandö: At Sandsvatn, fr. (!).

150. *B. argenteum* L.

B., L., Nw. (c.). — Fær., not rare. On the ground near the coast, especially on pathways of inhabited places. Only barren. Fær. acc. to T. Syd.: Vaag (!). Sandö: On sandy ground near Trödum (!). Vaagö: Midvaag (!). Str.: Thorshavn (R., !); Todnæs at Kollefjord; Vestmanhavn (!). Öst.: Göte; Funding (!).

151. *B. cæspiticum* L.

B., L., Nw. (c.). — Fær., rare. On sandy ground near the coast. Fær. acc. to T. Syd.: Near Kvalbøejde, (forma) ♀ barren (!). Sandö: Trödumbö, ♂ (!). Str.: Thorshavn (var. *gracilescens* Br. et Seh.), fr. (R.).

152. *B. pallescens* Schleich.

B., L., Nw. (c.). — Fær., not rare. On the ground among rocks, in crevices of rocks, in low-lying parts of the isles. Fr. frequent. Syd.: Near Tværaa and Trangisvaag; Kvanhaugen (!). Sandö: ? Trödumbö, on sandy ground, barren; Skorene (!). Vaagö: (R., R. Jensen); near Kvilehinavatn (!). Myggenæs (!). Str.: Thorshavn (Lb.); Gliversrejn; between Nordredal and Öreenge (!). Öst.: (R.); Götegjov; Skaalebotn; Ejde (!).

153. *B. cirratum* Hornsch.

B., L., Nw. (c., suba.). — Fær., very rare. Crevices of rocks. Str.: Gjanöregjov, fr. (J. H.). Öst.: Near Bredaskard, fr. (!).

154. *B. fallax* Mild.

B. (Denmark, Sweden, Finland) (w. c.). — Fær., very rare. On the ground. Str.: Thorshavn, fr. (!).

155. *B. Marratii* Wils.

B., Nw. (Atl.) — Fær., very rare. On wet sandy ground near the coast. Sandö: Near Trödum, in a wet hollow between the sand-hills, fr. (!).

156. *B. micans* Limpr. — Hagen determ.

Nw. (w. c., suba.). — Fær., not rare. On moist ground among stones, in crevices of rocks near streams and in clefts. 100—250 m. above sea-level. Always fr. Syd.: Near Trangisvaag and Tværaa; Præstefjæld (!). Sandö: Between Sand and Skopen (!). Öst.: Solmunde; Götegjov; Fuglefjord (!).

157. *B. pendulum* (Hornsch.) Schimp.

B., L., Nw. (c.). — Fær., very rare. Sandy ground near the coast. Sandö: At Trödum, fr. (!).

158. *B. retusum* Hag.

Nw. (Greenland). (Atl.). — Fær., rare. On moist ground among rocks near the coast. Vaagö: ? Near Bosdalafos, barren (!). Str.: Thorshavn, fr. (R.). Nolsö, fr. (R.). Öst.: Götegjov, fr.; shore at Mölen near Ejde, fr. (!).

159. *B. inclinatum* (Sw.) Bland.

B., I., Nw. (c.). — Fær., very rare. On moist, sandy and turfy ground near the sea-shore. Syd.: Præstefjæld, fr. (Sm.). Sandö: fr. (R.); shore of Grothusvatn, fr.; Trödum, fr. (!).

160. *B. lapponicum* Kaur.

Nw. (Atl.). — Fær., very rare. Among stones and rocks near the coast. Syd.: ? West coast near Kvalvig, barren (O.). Str.: Near Thors-havn, fr. (!).

161. *B. lacustre* (Bland.) Brid.

B., I., Nw. (c.). — Fær., very rare. On moist, sandy ground near the coast. Sandö: Near Trödum, in a wet hollow between the sand-hills, barren and associated with *B. Marratii* (!).

162. *B. filiforme* Dicks., *Anomobryum filiforme* Husu.

B., I., Nw. (c., suba.). — Fær., frequent. In crevices of rocks, from the sea-shore to the summits of mountains. Only barren. Syd.: Sumbö-fjæld; Vaag; Örneffjæld; near Trangisvaag; Frodebö; Kvanhaugen (!). Sandö: At Grothusvatn; between Sand and Skopen (!). Vaagö: At Kvilehinavatn; Rensatinder (!). Str.: Gliversrejn; Gjoverbotn near Lej-num; Vestmanhavngjov; Saxendalen (!). Bordö: Graverdalen, 50 m. (!).

Acc. to T. »*Bryum roseum*« has been discovered in Fær.

163. *Plagiobryum Zierii* Dicks. Lindb., *Zieria julacea* Schimpr.

B., I., Nw. (c., suba.). — Fær., frequent. Crevices of rocks, from the sea-shore to the summits of mountains. Only barren. Syd.: Sumbö (Lb.); Sumböfjæld (!); Vaag (J.H.); south side of Trangisvaagfjord; Trangis-vaag; Kvanhaugen; Norbes Ejde near Kvalbö (!). Sandö: Summit of Tinden (!). Vaagö: (R); Snaldansfjæld; at Kvilehinavatn, ♀; Thormans-gjov; Rensatinder; the east side of the island and other places (!). Str.: Hvidenæs; near Lejnum and Lejnumvatn, ♀; Skjællingfjæld; Vest-manhavngjov (!). Öst.: (R); Stölafjæld and Göteggjov (!). Bordö: Be-tween Aærne and Strand (!).

164. *Pohlia albicans* (Wahlenb.) Lindb., *Webera albicans* Schimpr., *Mniobryum albicans* Limpr.

B., I., Nw. (c.). — Fær., rare. On moist or wet ground among rocks, in crevices of rocks, from the sea-shore to ab. 500 m. Only barren. Syd.: (R); near Tværaa, 250 m. (!). Vaagö: Thormansgjov (!). Str.: Below Örvesfjæld, ♀ (!). Nolsö (R). Öst.: Göteggjov (!).

Var. *glacialis* (Schleich.) Limpr.

B., I., Nw. (c., suba.). — Fær., not rare. On wet ground, especially by rills and round springs, from 100 m. almost to the summits of the mountains. Only barren. Syd.: (R); Kvanhaugen and Præstefjæld (!). Str.: Frequent between Nordredal and Öreenge; Skjællingfjæld; below Örvesfjæld (!). Öst.: Göteggjov; between Skaalebotn and Andeffjord, abun-dant; Slattaratinde, abundant (!). Bordö: Graverdalen (!).

165. *P. færoënsis* sp. nov. (Plate IV.)

Dioicous. In dense, green, often more or less purplish, rarely quite purple to black-purple, faintly shining tufts or expanded patches. Stem erect or decumbent, 1—10 centim. long and, inclusive of leaves, ab. 1 mm. broad, slightly radiculose below, simple or with few branches, thin (0,33 mm.), but firm, with broad (0,065 mm.) central strand, uniformly leaved or the lower leaves destroyed except the firm nerve. Leaves erecto-patent, below the male inflor. imbricate, ovate, roundish-obtuse, entire or obsoletely denticulate above, not decurrent, very concave, margins plane; nerve strong, very prominent on back and longly decurrent, purplish, vanishing just below apex, transversal section with 4 indicating cells («Deuter»), a small conducting group («Begleiter») and a thick posterior band of stereids; cells rhombic or rhombo-hexagonal, walls incrassate, about the nervepoint more irregularly rectangular and broadly rhombic, at base rectangular; base purple or orange, consisting of laxer and thinner, rectangular and quadratic cells. Male inflor. gemmiform, terminal, finally lateral, bracts short and relatively broad, the broad part yellowish, consisting of thinwalled, rectangular cells, nerve distinct above, vanishing below, antheridia 2—3 together in the axis of bracts, mixed with somewhat longer paraphyses. Female plant unknown.

A curious species, somewhat resembling *Bryum alpinum* in habit, but the leaves roundish-obtuse as in *Bryum Maratii*. At first I named it *Bryum færoëense*, but my friend, Dr. J. Hagen, the eminent Norwegian bryologist, called my attention to the male inflor., which is as in *Pohlia*, where the antheridia are placed binary in the axis of bracts.

Specimens gathered by R. have been met with in the collections, Th. Jensen has labelled them »*Bryum calophyllum*« and »*Bryum Maratii*? or new«.

Fær., not rare. On stones and rocks in running water, below 100 m. associated with *Amblystegium ochraceum*, *Hypnum rivulare*, *H. rusciforme* and *Martiellia purpurascens*. Syd.: (R.); Near Famién and Ördevig (!). Vaagö (R). Str.: Saxendalen (!). Nolsö (R). Bordö: Graverdalen (!).

166. *P. Ludwiggii* (Spreng.), Webera *Ludwiggii* Schimp. (Syn. ed. 2), W. Breidlerii Jur., *Pohlia Weigelii* Lindb.

B., Nw. (alp. arct.). — Fær., very rare. Öst.: Grönaskardskil between Skaalebotn and Andefjord, 480 m., on moist ground abundant and fr. (!).

167. *P. commutata* (Schimp.) Lindb., *Webera commutata* Schimp. (Syn. ed. 2), *W. Ludwigii* Br. eur. Hartm.

B., I., Nw. (c., suba.). — Fær., not rare. On moist ground, from ab. 100 m. to the summits of mountains. Fr. rare. Syd.: Near Trangisvaag, ♂; Præstefjæld (!). Sandö: At Grothusvatn (!). Vaagö: Rensatinder (!). Str.: Between Öreenge and Kalbakfjord; below Örvesfjæld, fr. (!). Öst.: Grönaskardskil between Skaalebotn and Andefjord; Slattaratinde; near Ejde (!).

168. *P. gracilis* (Schleich.) Lindb., *Webera gracilis* De Not.

B., I., Nw. (c., suba.). — Fær., very rare. On moist ground. Syd.: The mountain between Trangisvaag and Kvalbö, ab. 300 m., barren (!).

169. *P. annotina* (L.) Lindb., *Webera annotina* (Hedw.) Bruch.

B., I., Nw. (c.). — Fær., rare. On moist ground, below 200 m. Fr. rare. Syd.: (R); Lopra, fr.; Kvanhaugen, fr.; Præstefjæld (!). Sandö: At Sandsvatn (!). Vaagö: Midvaag, ♀ barren; east side of the island, ♀ barren (!). Str.: Near Lejnumvatn; near Vestmanhavn, ♀ barren (!).

170. *P. nutans* (Schreb.) Lindb., *Webera nutans* Hedw.

B., I., Nw. (c.). — Fær., frequent. On rather dry as well as on moist ground, from the sea-shore to the summits of mountains. Fr. frequent. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

Var. *teres* C. Jens.

Syd.: Summit of Kvannefjæld, barren (!).

171. *P. cruda* (L.) Lindb., *Webera cruda* Bruch.

B., I., Nw. (c.). — Fær., frequent. On the ground among rocks, in crevices of rocks, from the sea-shore to the summits of mountains. Fr. not rare. Syd.: Vaag; below Örnefjæld; Kvanhaugen; Præstefjæld (!). Sandö: Between Sand and Skopen; summit of Tinden (!). Vaagö: Rensatinder; Thormansgjov; near Kvilchinavatn (!). Str.: Gliversrejn; between Nordredal and Öreenge; Saxendalen (!). Öst.: Stölafljæld; Götegjov; between Skaalebotn and Andefjord (!). Bordö: Near Strand (!). Kalsö: Blankeskaalefjæld (J. H.). Kunö (J. H.).

172. *P. elongata* Hedw., *Webera elongata* Schwægr.

B., Nw. (c., suba.). — Fær., very rare. In crevices of rocks. Bordö: Höjelfjæld, between 500 and 650 m., fr. (O.).

173. *P. polymorpha* Hornsch. var. *affinis* (H. et H.), *Webera polymorpha* var. *affinis* Schimp.

B., Nw. (c., suba.). — Fær., rare. In crevices of rocks, above 400 m. to the summits of mountains. Always fr. A specimen of *P. polymorpha* var. *affinis*, labelled «*Meesia uliginosa*? Færoe», but without the discoverer's name, is to be found in the Museum of the Botanical Gardens, Copenhagen. Syd.: Sumböfjæld, 500 m., fr. (!). Str.: Below Örvesfjæld, ab. 400 m., fr. (!). Öst.: fr. (R.); Stölafljæld, 500 m., fr. (!).

174. *P. acuminata* Hornsch., *Webera acuminata* Schimp.

B., Nw. (c., suba.). — Fær., frequent. On the ground among rocks and in crevices of rocks, from the lower parts to the summits of mountains. Always fr. Syd.: Below Örnefjæld and near Trangisvaag (!). Sandö: Summit of Tinden (!). Vaagö: Rensatinder (R.); Thormansgjov; near Kvilehinavtn (!). Str.: Near Nordredal; Skjælling (!). Öst.: (R.); Götégjov; Grönaskardskil between Skaalebotn and Andefjord (!). Bordö: Between Aærne and Strand (!).

175. *Funaria hygrometrica* (L.) Sibth.

B., L., Nw. (c.). — Fær., rare. On the ground near inhabited places. Notified by Landt. Str.: Thorshavn, fr. (R); Kalbakbotn, fr. (Sm). Bordö: Klaksvig, fr. (!).

176. *F. obtusa* (Dicks.) Lindb., *Entosthodon ericetorum* C. Müll.

B., L., Nw. (Atl.). — Fær., frequent. On moist ground in low-lying parts of the isles. Always fr. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

177. *F. attenuata* (Dicks.) Lindb., *Entosthodon Templetoni* Schwægr.

B. (Atl.). — Fær., very rare. On the ground near the coast. Öst.: Götégjov, fr. (!).

178. *Splachnum pedunculatum* (Huds.) Lindb.

B., L., Nw. (c., suba.). — Fær., very rare. On moist ground. Fær., fr. (Lb.). Str.: Saxendalen, fr. (!). Öst.: Near Ejde, fr. (!).

»*Splachnum ampullaceum*« is recorded from Fær. by T.

179. *Tetraplodon bryoides* (Zoeg.) Lindb., *T. mnioides* Schimp.

B., L., Nw. (c., suba.). — Fær., very rare. Str.: Kirkebøfjæld and rocks near Thorshavn, fr. (Lb.); Gliversrejn, fr. (R., !).

180. *Diphyscium sessile* (Schmid.) Lindb., *D. foliosum* Mohr., *Webera sessilis* Lindb.

B., L., Nw. (c. w.). — Fær., common. On the ground, from the seashore to the summits of mountains, commonest in low-lying parts. Always fr. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Var. *acutifolia* Lindb.

B. (Atl.). — Fær., rare. On the ground in low-lying parts of the isles. Always fr. Syd.: Near Famienvatn (!); Præstefjæld (R.). Str.: Gliversrejn (R.). Öst.: Fuglefjord (!).

181. *Leersia rhabdocarpa* (Schwægr.) Lindb., *Encalypta rhabdocarpa* Schwægr.

B., L., Nw. (c., suba.). — Fær., rare. On the ground among rocks and in crevices of rocks, from 200 m. to ab. 500 m. Always fr. Syd.: Near Tværaa and Trangisvaag; Præstefjæld (!). Sandö: Summit of Tinden (!). Öst.: Between Skaalebotn and Andefjord (!).

182. *L. laciniata* Hedw., *Encalypta ciliata* Hoffm.

B., I., Nw. (c., suba.). — Fær., not rare. Crevices of rocks, on the ground among rocks, from the sea-shore to ab. 300 m. Always fr. Notified by T. Syd.: (R.); Vaag; near Tværaa and Trangisvaag; Kvanhaugen; Præstefjæld (!). Vaagö: Near Kvilehinavatn (!). Str.: (R.); Gjanöregjov (J. H.). Öst.: Götegjov (!). Bordö: Above Strand (!).

183. *Tortula ruralis* (L.) Ehrh. var. *arenicola* Braithw.

B. (*Tortula ruralis*: I., Nw.) (c.). — Fær., very rare. On sandy ground near the coast. Sandö: Trödumbö, barren (!).

184. *T. subulata* (L.) Hedw.

B., I., Nw. (c.). — Fær., frequent. On the ground among rocks and in crevices of rocks, from the sea-shore to the summits of mountains. Always fr. First detected by Lb. Syd.; St. Dimon; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

185. *T. muralis* (L.) Hedw., *Barbula muralis* Timm.

B., Nw. (c.). Fær., not rare. On the mortar of walls. Always fr. Syd.: Vaag; Tværaa; Kvalbö (!). Vaagö: Midvaag (!). Str.: Ruin near Kirkebö; Arge; Thorshavn (R.); Kollefjord; Vestmanhavn (!). Kvalvig (Sm.). Bordö: Klaksvig (!).

»*Tortula rigida*« is recorded from Fær. by T.

186. *Pottia crinita* Wils.

B. (Atl.). — Fær., very rare. On basaltic rocks near the sea. St. Dimon, barren (!).

187. *P. Heimii* (Hedw.) Fűrnr., *Tortula Heimii* Milt.

B., I., Nw. (w. c.). — Fær., not rare. On moist ground near the coast. Always fr. Syd.: Vaag (Lb.); Skarvetange near Frodebö (O.); near Kvalbö (Lb., !). St. Dimon (!). Vaagö: Near Bosdalafof (!). Str. (R.). Nolsö (R.). Öst.: Shore of Mölen near Ejde (!).

»*Gymnostomum ovatum*« and »*G. truncatulum*« are recorded from Fær. by T., and *Pottia latifolia* by Kindberg.

188. *Mollia tortuosa* (L.) Schrank., *Tortula tortuosa* Ehrh., *Barbula tortuosa* W. et M.

B., I., Nw. (c.). — Fær., frequent. On moist ground from the sea-shore to ab. 500 m. Only barren. Notified by T. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö; Viderö.

189. *M. flavovirens* (Bruch) Lindb., *Trichostomum flavovirens* Bruch.

B. (Atl.). — Fær., very rare. Vaagö: Near Bosdalafof, on small grassy banks, barren (!).

190. *M. tenuirostris* (Hook., Tayl.) Lindb., *Didymodon cylindricus* Br. eur.

B., Nw. (Atl., suba.). — Fær., very rare. In moist, shady places among larger stones and in clefts, below 100 m. Only barren. Syd.: Shore of Famiensvatn (!). Öst.: Gøtegjov (!).

191. *M. litoralis* (Mitt.) Braithw., *Trichostomum litorale* Mitt., ?*Tr. mucronatulum* Card.

B., I., Nw. (Atl.). — Fær., common. On the ground among stones and rocks, especially by streams, from the sea-shore to ab. 500 m. Abundant, but always barren. First discovered by Sm. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Kalsö; Bordö.

Very variable in size and colour, length of the leaves and especially the form of their point, which is often both obtuse and acuminate in the same plant. The *M. litoralis*, indeed, appears to be only an Atlantic variety or subspecies of *M. brachydontia*. Short leaved Færøese specimens quite agree with the description and figure of *Trichostomum mucronatulum* Cardot (Mosses of the Azores and of Madeira in Eighth annual report of the Missouri Botanical Garden, 1897).

192. *M. brachydontia* (Bruch.) Lindb., *Trichostomum mutabile* Bruch.

B. (Sweden). (w. c.). — Fær., very rare. On moist ground. Vaagö: Midvaag, barren (!).

Leaf-margins of the former species as well as of this single specimen of *M. brachydontia* are, where the pellucid and the opaque parts meet, more or less denticulate in the same manner as in *Trichostomum mucronatulum*. This is not the case with specimens of *M. brachydontia* from Gotland in Sweden (gathered by Zetterstedt and K. Johansen), which have the margins quite entire, but agrees with the Færøese *M. brachydontia* in having elongato-lanceolate, acuminate leaves.

193. *M. aeruginosa* (Sm.) Lindb., *Gymnostomum rupestre* Schleich.

B., I., Nw. (c., suba.). — Fær., very rare. Crevices of rocks in damp, shady places, below 150 m. Syd.: Near Trangisvaag, barren (!). Str.: Gjanöregjov, fr. (J. H.). Bordö: Højefjæld, barren (Sm.).

194. *M. rutilans* (Hedw.) Lindb., *Weissia rutilans* Lindb., Limpr.

B., Nw. (w. c.). — Fær., frequent. On the ground in lower parts of the isles. Always fr. Syd.: Lopra; Vaag; Famiensvatn; Ördevig; below Örnefjæld; Frodebö; Prästefjæld (!). Sandö: Tindelfjæld; at Sandsvatn (!). Vaagö: Midvaag (!). Myggenæs (!). Öst.: Solmunde; Stölafjæld; Ejde (!). Bordö: Graverdal (!).

Leaf-margins plane or one of them partly narrow-involute, teeth of peristome short and broad or rudimentary, spores 0,020—0,025 mm. diameter.

195. **M. crispata** (Br. germ.), *Weissia viridula* var. *gymnostomoides* Br. eur.

B., N. (c., suba.). — Fær., very rare. Crevices of rocks near the coast. Syd.: Vaag, fr.; Kaaregjöv near Kvalbø, fr. (!). Vaagö: Near Bosdalafos, barren (!).

196. **M. tortilis** (Schwægr.) Braithw., *Hymenostomum tortile* Br. eur.

B. (c., suba.). — Fær., very rare. Crevices of rocks. Sandö: Shore of Grothusvatn, fr. (!).

197. **Barbula rubella** (Hoffm.) Mitt., *Didymodon rubellus* Br. eur.

B., I., Nw. (c.). — Fær., not frequent. On the ground, in crevices of rocks, from the sea-shore to ab. 400 m. Usually fr. Syd.: Near Tværaa and Trangisvaag; Kvanhaugen (!). Sandö: At Trödum, on sandy ground (R., !). Vaagö: (R.); near Kvilchinavatn (!). Str.: Thorshavn (R.); near Lejnumvatn (!). Nolsö (R.). Öst.: Stölafjæld; Gøtegjöv; eastern declivity of Trelavandsskardet (!). Bordö: Above Strand (!).

198. **B. unguiculata** (Huds.) Hedw. var. **cuspidata** (Schultz) Braithw.

B. (c.). — Fær., very rare. On the ground near the coast. Only barren. Sandö: Trödumbö (!). Nolsö (R.). Öst.: Shore of Mölen near Ejde (!).

199. **B. icmadophila** Br. eur.

B., I., Nw. (c., suba.). — Fær., very rare. On the ground among rocks, in the highest parts of mountains, above 400 m. Only barren. Sandö: Summit of Tinden (!). Vaagö: Rensatinder, near the summit (!). Öst.: Grönaskardskil between Skaalebotn and Andefjord (!).

200. **B. cylindrica** (Tayl.) Schimp.

B., Nw.? (Denmark, Sweden). (w. c.). — Fær., frequent. On the ground among rocks, in crevices of rocks, from the sea-shore to the summits of mountains. Only barren. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö; Viderö.

A rather large, reddish-brown form (forma *rufescens*) appears to be more frequent than the usual form elsewhere.

201. **B. fallax** Hedw.

B., Nw. (c.). — Fær., very rare. Sandö: Trödumbö, on moist sandy ground near the coast, barren (!).

202. **B. reflexa** Brid.

B., (Sweden, Finland). (c., suba.). — Fær., very rare. On moist, grassy and mossy ground among rocks near the coast. Bordö: Graverdal near Bordövig, 5 m. above sea-level, barren (!).

More robust than usual, and appears to come nearest to the var. *robusta* Braithw.

203. **B. brevifolia** (Dicks.) Lindb., *Trichostomum tophaceum* Brid.

B., (Denmark, Sweden). (c.). — Fær., very rare. Crevices of rocks near the coast. Str.: Near Thorshavn, barren (!).

Var. *acutifolia* Schimp.

B. (Atl.). — Fær., very rare. On the ground near the sea-shore. Only barren. Syd.: Frødebö (R.). Vaagö: Near Bosdalafos, on small grassy banks (!).

204. **Dicranum albicans** Br. eur., *D. enerve* Thed.

Nw. (alp. arct.). — Fær., very rare. On moist ground in higher parts of the mountains, not below 400 m. Only barren. Str.: Below Örvessjæld, 450 m. (!). Öst.: Near Brejdaskard, 400 m.; Grönaskardskil between Skaalebotn and Andefjord, 480 m.; Slattaratinde, 700 m. (!).

205. **D. longifolium** Ehrh.

B., Nw. (c.). — Fær., very rare. Öst.: Near Næs, barren (Lb.). Gathered probably on a large stone in the lowland. Notified by T.

206. **D. fuscescens** Turn.

B., Nw. (c.). — Fær., very rare. Öst.: Slattaratinde, on a moist shady rock with northern aspect, ab. 500 m. above sea-level, barren (!).

207. **D. Bonjeani** De Not., *D. palustre* Br. eur.

B., I., Nw. (c.). — Fær., frequent. On wet ground, from the sea-shore to ab. 400 m. Only barren. First discovered by R. Syd.; Sandö; Myggenæs; Str.; Öst.; Bordö.

208. **D. scoparium** (L.) Hedw.

B., I., Nw. (c.). — Fær., common. On the ground and on rocks, from the sea-level to the summits of mountains. Fr. not frequent. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

Somewhat variable in size and direction of leaves; formae *orthophyllae*, often with the leaf-point shorter and entire, are frequent on exposed rocks and large stones.

209. **D. majus** Sm.

B., I., Nw. (c.). — Fær., frequent. On grassy and mossy ground, from the lower parts to ab. 500 m. Only barren. Syd.: Spinerne near

Sumbö (forma *gracilis*); Vaag; Famienvatn; Kvanhaugen; Prästefjæld (!). Sandö: Skorene (!). Vaagö: (R. Jensen); Rensatinder; near Fjatlavtn; Thormansgjov (!). Str.: Gliversnæs (R. !); Varden near Thorshavn (R.); between Nordredal and Öreenge; below Örvesfjæld; Saxendalen (!). Öst.: (R.); between Göte and Fuglefjord; Trelavandsskardet; near Ejde (!). Bordö: Above Strand (!). Viderö: Summit of Bergsmunna (O.).

210. **D. arcticum** Schimp., *D. molle* Wils., *D. glaciale* Berggr.

B., I., Nw. (alp. arct.). — Fær., frequent. On the ground, from 400 m. to the summits of mountains, rare below 400 m. to ab. 150 m. Fr. not rare. Sandö: Skorene (!). Vaagö: Rensatinder; above Vigum; near Kvilehinavatn; Snaldansfjæld, fr. (!). Myggenæs: Summit of Klejven (!). Str.: Between Nordredal and Öreenge, fr.; summit of Skjællingfjæld (Lb., R., !); Snejsen near Kvivig (Lb.); below Örvesfjæld, fr. (!). Öst.: Rejafjæld (O.); Stölafjæld; Trelavandsskard, fr.; near Bredaskard; Slattaratinde, fr. (!). Kunö (O.). Bordö: Summits of Klakken (O.) and Holgafjæld (J.H.); Höjefjæld (O.). Viderö: Malinsfjæld; summit of Mornefjæld (O.).

Somewhat variable in size and direction of leaves; forms with suberect or somewhat secund leaves are frequent, with straight, erecto-patent (f. *ortophylla*) or with falcato-secund (f. *uncinata*) leaves rare.

211. **D. Starkei** W. M.

B., I., Nw. (c., suba.). — Fær., not rare. On moist sandy or gravelly ground, in pure cushions or amongst other mosses, in higher parts of the mountains. Fr. rare. Notified by T. Syd.: Sumböfjæld; Kvannefjæld (!). Myggenæs (!). Between Nordredal and Öreenge; summit of Skjællingfjæld; below Örvesfjæld (!). Öst.: East side of Trelavandsskard; Grönaskardskil between Skaalebotn and Andefjord, fr.; Slattaratinde, fr. (!). Kunö: The summit (J.H.).

Variable in size and direction of leaves; forms with falcato-secund leaves are predominant, with suberect leaves rare. Close to *D. arcticum*, from which it is readily distinguished by its narrow leaves, with more subulate acumen, its smaller, upwards more indistinctly defined group of angular-cells. Both species agree in having the group of angular-cells distinctly removed from the nerve at least half the breadth of the angular group. (See figs. 1—8 p. 158).

212. **D. falcatum** Hedw.

B., I., Nw. (alp. arct.). — Fær., rare. On moist ground in the highest parts of the mountains (above 500 m.). Notified by T. Str.: Between Nordredal and Öreenge, fr. (!); Snejsen near Kvivig, fr. (Lb.). Öst.: Grönaskardskil and Slattaratinde, fr. (!). Kunö: barren (O.).

213. **D. fulvellum** (Dicks.) Sm.

B., I., Nw. (alp. arct.). — Fær., frequent. In moist, turfy and gravelly soil among rocks and stones, from low-lying parts of the isles to

the summits of mountains. Fr. not rare, often abundant. First discovered by Lb. Syd.; Sandō; Vaagō, Myggenæs; Str.; Öst.; Nordreöer.

Very variabel in habit, size and colour, density of the tufts, direction of leaves. Densely cushioned forms with erecto-patent (f. *orthophylla*) or indistinctly secund leaves are predominant, loosely tufted with falcato-sekund leaves rare. Leaves entire or often the margins and back of nerve in the subula obsolete denticulate, especially in the loosely tufted forms.



Fig. 28. *Dicranum Starkii*. Leaves, 1—3 of forma *orthophylla*, 4—5 of forma *drepanophylla*. ($\frac{15}{1}$).
Figs. 6—8. *Dicranum arcticum*, Leaves. ($\frac{15}{1}$).

214. **D. Anderssonii** (Wich.) Schimp., *Arctoa Anderssonii* Wich. (Plate V, VI).

Lapland. (alp. arct.). — Fær., very rare. Vaagō: Eastern declivity of Snaldansfjeld, on moist gravelly ground, 300 m., fr. abundantly (!).

Autoicous. In small, short, dense cushions, about 1 centim. high, yellowish- or brownish-green above, blackish-brown below. Leaves dense, straight, erecto-patent, from a broad-ovate base suddenly subulate or lanceolate-subulate, somewhat glossy, entire or obsolete denticulate at subula; cells narrow, about 0,01 mm. in

breadth, walls incrassated, slightly and indistinctly or not at all pored, rectangular, elongated, along the margins shorter, group of angular-cells brownish, small, not distinctly defined, removed from the nerve, sometimes indistinct or wanting; nerve narrow, $\frac{1}{15}$ — $\frac{1}{20}$ of base, consisting of homogenous cells, excurrent in a short or long, acute subula. Perichætal-bract broad, sheathing, of laxer texture, suddenly contracted to a subula $\frac{2}{3}$ — $\frac{1}{3}$ length of the sheath. Seta very short, pale, about twice the length of capsule. Calyptra cucullate with a thick rostrum. Capsule immersed in the perichætum, ovato-globose, wide-mouthed, fuscous, without stomata, sulcate when dry, outer cells of exothecium very thickwalled, in the deepenings irregularly rhombic and rectangular, in the walls elongated and narrow; annulus persistent, of 2 rows of cells; lid orange, conic, with a long, subulate, oblique beak; peristome suberect when dry, red, teeth narrowly lanceolate-subulate, irregularly bifid or perforated. Spores large (0,025—0,033 mm.), pale brownish-green, finally papillose. Male inflor. below the perichætum, gemmiform, about 0,66 mm. long, bract shortly acuminate, inner obtuse.

A distinct species, readily distinguished from all other European *Dicrana* by the immersed capsule without stomata. My friend Mr. H. Lindberg of Helsingfors, has kindly compared the Fæøese specimen with the original specimen of *Arctoa Anderssonii* Wich. in Professor S. O. Lindberg's Herbarium, and informs me that he has found no difference of value between them. The spores of the Færøese specimen are a little smaller and the group of angular cells in the leaves appears to be a little more distinct. Nothing else!

215. *Dicranoweissia crispula* (Hedw.) Lindb., *Weissia crispula* Hedw.

B., I., Nw. (c., suba.). — Fær., frequent. On the ground and rocks, from the lower parts to the summits of mountains. Fr. common. First discovered by Lb. Syd.; Sandö (f. *brevifolia*); Vaagö, Str.; Öst.; Bordö; Viderö.

216. *Campylopus atrovirens* De Not.

B., Nw. (atl., suba.). — Fær., common. On wet or spongy ground from the sea-shore to ab. 400 m. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

217. *C. flexuosus* (L.) Brid.

B., I., Nw. (w.c.). — Fær., frequent. On moist ground from the sea-shore to ab. 400 m. Fr. rare. Notified by T. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

Very variable in size, density of tufts, colour, direction of leaves. Densely tufted forms with straight, erect leaves (f. *orthophylla*) are common. I gathered in Gjøverbotn near Lejnum (Str.) another form of the size of *C. atrovirens*, glossy golden-green above, fuscous below, with nearly straight, suberect leaves. In Trangisvaaghö (Syd.) I found a robust, dull-green form with subsecund leaves. The fruit-bearing forms, which are usually more loosely tufted, glossy yellow-green above and reddish brown below, with more or less subsecund leaves, I have found at Frodebö (Syd.) and in Gliversrejn near Thorshavn (Str.). *C. brevifolius* is notified by R., but no specimen has been with in the collections.

218. *C. Schwarzii* Schimp.

B., Nw. (w. c., suba.). — Fær., frequent. In similar places as *C. atrovirens*. Only barren. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst.: Bordö.

Variable in density of the tufts, colour, direction of the leaves. On Rensatinder (Vaagö), 300 m., and below Örvessjæld (Str.), 450 m., I gathered a very pretty robust form, the comal-leaves of which are partly, the long subula especially, tinged with red (f. *robusta*, *auronitens*).

219. *C. Schimperii* Milde.

B., Nw. (c., suba.). — Fær., not rare. On the ground, from low-lying parts to the summits of mountains. Only barren. Syd.: Sumböfjæld; Örnefjæld (!). Sandö: At Grothusvatn; summit of Tinden (!). Vaagö: Rensatinder, near the summit (!). Myggenæs (!). Str.: Near Thorshavn (R.). Nolsö (R.). Öst.: Stölafljæld; near Gjøv; Slattaratinde (!).

Variable in colour and height of the tufts, but agrees exactly with specimens of *Campylopus Schimperii* from Ben Lawers in Scotland, gathered by Braithwaite. A proper form appears to be: —

Var. *flagellifera* v. n.

Densely tufted, 3—4 centim. high, yellowish above, fuscous below, interwoven with radicles, producing from the upper parts of the stem plural, fragile, filiform ramuli, with imbricated, very short and obtusely acuminate leaves.

Syd.: Lopra, 50 m. (!).

220. *C. fragilis* (Dicks.) Br. eur.

B., Nw. (w. c.). — Fær., frequent. On moist, grassy and mossy ground, from the sea-shore to ab. 400 m. Only barren. Syd.: (R.); Lopra (!); Vaag (Sm., !); Famienvatn; below Örnefjæld; near Trangisvaag; Frodebö (!). Vaagö: The east side of the island; Rensatinder (!).

Myggenæs (!). Str.: Gjoverbotn and Skjællingfjæld near Kvivig; near Nordredal (!). Öst.: Næs (J. H.); Stölafjæld (!). Bordö: Graverdal; near Aærne (!).

Very variable in size, habit and colour. A densely tufted form, yellowish above and fuscous below, occurs frequently. Green forms are only met with in shady places. On the east side of Vaagö, on wet ground among rocks, I have gathered a pretty, robust, densely tufted form, the tufts of which are 4—5 centim. high, yellow-green above, fuscous below and interwoven with radicles.

221. *Blindia acuta* (Huds.) Br. eur.

B., I., Nw. (c., suba.). — Fær., common. On stones and rocks, on moist gravelly ground, near streams and rills, from the sea-shore to the summits of mountains. Fr. not frequent. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

222. *Anisothecium squarrosus* (Stark.) Lindb., *Dicranella squarrosa* Schimp.

B., I., Nw. (c., suba.). — Fær., common. On moist ground, by streams, in rills, from the sea-shore to ab. 300 m. Fr. rare. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö (fr.).

The tall, robust form (f. *fontana*) is common in rills. Some small and low forms grow on moist ground below Örnefjæld (Syd.), near Lejnumvatn (Str.) and at Aærne, fr. (Bordö).

223. *A. crispum* (Schreb.) Lindb., var. *atlanticum* v. n.

Cæspitulose, gracile, ab. 1 centim. high, yellowish green above, reddish brown at the base, leaves squarrose, laxly areolate as in var. *elatum* Schimp., but differs in the partly obtuse and entire, partly acute and indistinctly denticulate apex, mixed on the same stem; nerve vanishing below apex.

Str.: Vestmanhavn, on the ground, barren (!).

224. *Dicranella cerviculata* (Hedw.) Schimp.

B., I., Nw. (c.). — Fær., very rare. On moist turfy ground in low-lying parts. Only barren. Syd.: Lopra, ♂ (!). Vaagö: Midvaag (!).

225. *D. heteromalla* (L.) Schimp.

B., Nw. (c.). — Fær., frequent. On the ground from the sea-shore to ab. 300 m. Fr. frequent. Recorded by Landt and T. Syd.: (R.); Lopra; Vaag; Ördavig; Trangisvaag; Frodebö (!). Sandö: Trödum-Bö; Todnæs; Holsavatn (!). Myggenæs (!). Str.: Thorshavn (Lb., !); Varden near Thorshavn (J. H.); Skjællingfjæld (R.); Snejsen near Kvivig (Lb.); Gjoverbotn near Lejnum; Saxendalen (!). Öst.: Næs (Lb.); near Ejde and Gjøv (!). Bordö: Between Aærne and Strand (!).

226. *D. secunda* (Sw.) Lindb., *D. subulata* Schimp.

B., I., Nw. (c., suba.). — Fær., frequent. On the ground, from the sea-shore to ab. 400 m. Fr. frequent. Syd.: Örnefjæld; Trangisvaag-Bö; Præstefjæld; Kvalbø (!). Vaagö: (R. Jensen); Midvaag; near Kvilchina-vatn (!). Str.: (R.); near Thorshavn; Gliversrejn (!); Kvivig (Lb.); Vest-manhavn (!). Öst.: Solmunde; near Trelavandsskard; near Gjøv and Ejde (!). Bordö: Graverdal (!).

227. *Swartzia montana* (Lam.) Lindb., *Distichium capillaceum* Br. eur.

B., I., Nw. (c.). — Fær., rare. On moist or wet ground among rocks and in crevices of rocks, from low-lying parts to ab. 500 m. Syd.: Sumböfjæld, barren; near Trangisvaag, fr.; Kvanhaugen, fr. (!). Öst.: fr. (R.); Gøtegjov, fr. (!).

228. *Ditrichum flexicaule* (Schleich.) Hamp., *Leptotrichum flexicaule* Hamp.

B., I., Nw. (c., suba.). — Fær., frequent. On moist ground often among other mosses, from the sea-shore to ab. 500 m. Only barren. Syd.: Sumbö; Spinerne; near Trangisvaag; Præstefjæld; Kvalbø-Ejde (!). Sandö: At Grothusvatn; Skorene (!). Vaagö: Rensatinder; near Kvil-chinavatn; Snaldansfjæld (!). Myggenæs (!). Str.: Gjøverbotn near Lejnum (!). Öst.: Stöla fjæld; eastern declivity of Trelavandsskard; Slat-taratinde (!). Bordö: Graverdal; near Aerne and Strand (!).

229. *D. homomallum* (Hedw.) Hamp., *Leptotrichum homomallum* Hamp.

B., I., Nw. (w. c.). — Fær., frequent. On the ground from the sea-shore to ab. 600 m. Fr. frequent. Syd.: Below Örnefjæld; Trangisvaag; Frodebö; Kaaregjov and Præstefjæld near Kvalbø (!). Sandö (R.). Vaagö: Midvaag; Rensatinder (!). Str.: Gliversrejn (!); Thorshavn (R.); Kvivig (Lb.). Nolsö (R.). Öst.: (R.); Summit of Rejaffjældstinde (O.); Gøtegjov; between Gjøv and Ejde (!). Bordö: Graverdal (!).

Var. *subalpinum* Br. eur.

Myggenæs, near the summit of Kleiven (!).

»*Phascum subulatum*« is recorded from Fær. by T. A barren specimen gathered by Lb. and named »*Phascum subulatum* L.« belongs to *Dicranella heteromalla*.

230. *Archidium alternifolium* (Dicks.) Schimpr., *A. phascoides* Brid.

B., Nw. (w. c.). — Fær., very rare. On wet ground near the coast. Syd.: Frodebö, fr. (!). Str.: Near Thorshavn, barren (!).

231. *Dichodontium pellucidum* (L., Neck.) Schimp.

B., I., Nw. (c., suba.). — Fær., common. On moist ground among rocks and in crevices of rocks, from the sea-shore to ab. 500 m. Fr.

very rare. Notified by T. Syd., (fr.); St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö, (fr.).

Somewhat variable in size and habit, and density of the tufts.

Var. **fagimontanum** (Brid.) Braithw.

Syd.: The mountain between Trangisvaag and Kvalbö (!). St. Dimon (!).

232. **D. flavescens** (Dicks.) Lindb., *D. pellucidum* var. *serratum* Schimp.

B. (Sweden). (Atl., suba.). — Fær., very rare. In crevices of moist rocks in clefts. Only barren. Syd.: (R.); near Tværaa, 250 m. (!). Öst.: Götegvog, 10 m. (!).

233. **Oncophorus Wahlenbergii** Brid., *Cynodontium virens* var. *Wahlenbergii* Schimp.

B., I., Nw. (c., suba.). — Fær., rare. On mossy and grassy ground, ab. 200—400 m. Vaagö: Snaldansfjæld, fr. (!). Str.: Between Nordredal and Öreenge, fr.; near Vestmanhavn, fr. (!). Öst.: Between Skaalebotn and Andefjord, fr. (!).

234. **O. virens** (Sw.) Brid., *Cynodontium virens* Schimp.

B., I., Nw. (c., suba.). — Fær., rare. On mossy and grassy ground, from the sea-shore to ab. 300 m. Syd.: Sumbö, barren (!); ravine near Vaag (according to Sm.). Str.: Gjoverbotn, fr. (!). Öst.: Near Bredaskard, barren (!). Bordö: Graverdal, fr. (!).

It is curious that the capsules of this and the former species are commonly wanting, and only the setae are present. I am unable to explain this fact. They are possibly bitten off by animals (birds?).

235. **O. polycarpus** (Ehrh.) Brid., *Cynodontium polycarpum* Schimp.

B., I., Nw. (c., suba.). — Fær., very rare. On exposed rocks. Str.: Near Thorshavn, fr. (Lb., R.).

236. **O. crispatus** (Dicks.) Lindb., *Rhabdoweissia denticulata* Br. eur.

B., I., Nw. (w. c., suba.). — Fær., very rare. In clefts near the sea-shore, on depending rooflets — generally of *Luzula maxima* — covered with earth. Syd.: Vaag, fr. (!). Str.: Vestmanhavn, fr. (!).

237. **Ceratodon purpureus** (L.) Brid.

B., I., Nw. (c.). — Fær., frequent. On the ground from the sea-shore to the summits of mountains. Fr. frequent. Recorded by Landt and T. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Somewhat variable. Leaves often reddish with excurrent nerve and more thickwalled cells in the acumen, but the teeth of peristome are typical.

238. *Weissia maritima* (C.M. et K.) Britt., *Ulota maritima* C. Müll. et Kindb.

B., I., Nw. (Atl.). — Fær., very common. On rocks, especially near the coast. Only barren. First discovered by R. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

The Færöese specimens agree exactly with specimens from Sweden (Bohuslän, gathered by Kindberg) and Canada (Vancouver Isl., gathered by Macoun) kindly sent to me by Dr. Kindberg. In Kvivig (Str.) it also grows upon the stem of *Salix phyllifolia*.

239. *W. americana* (P. Beauv.) Lindb., *Ulota Hutchinsiae* Hamm., *Orthotrichum Hutchinsiae* Sm.

B., Nw. (Atl.). — Fær., not rare. On large stones near the coast. Always fr. Syd.: Below Præstefjæld, fr. (!). Hestö: fr. (R.). Vaagö (R.). Str.: Kirkebö and Varden, fr. (R.); Gjoverbotn near Lejnum, fr. (!); Kalbakfjord, fr. (Lb.). Öst.: At Toftevatn, fr. (Lb., J.H.); Fuglefjord, fr. (!).

240. *Orthotrichum rupestre* Schleich.

B., I., Nw. (c.). — Fær., rare. On larger stones on lake-shores near the sea. Always fr. Fær. (Lb.). Syd.: Famen and Kvanhaugvatn (!). Sandö: Grothusvatn and Sandsvatn (!). Str.: (R.); near Kirkebö (J.H.).

»*Orthotrichum anomalum*« is notified by T. and H., but no specimens have been met with in the collections. Specimens labelled »*Orthotrichum anomalum*?« and gathered by Lb., belong to *O. rupestre* and *Weissia americana*.

241. *Zygodon viridissimus* (Dicks.) Brown, var. *rupestris* Lindb.

B., I., Nw. (w.c., suba.). — Fær., very rare. On rocks in clefts. Only barren. Syd.: Vaag (!). Öst.: Göttegjov (!).

Zygodon Nowellii is notified by Kindberg.

242. *Pleurozygodon æstivus* (Hedw.) Lindb., *Anoetangium compactum* Schwægr.

B., I., Nw. (c., suba.). — Fær., frequent. On moist ground among rocks and in crevices of rocks, from low-lying parts to ab. 500 m. Only barren. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

243. *Anoetangium Mougeotii* (Bruch.) Lindb., *Amphoridium Mougeotii* Schimp.

B., I., Nw. (c., suba.). — Fær., frequent. Crevices of rocks, from low-lying parts to ab. 500 m. Fr. very rare. First discovered by R. Syd. (fr.); Sandö (fr.); Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

244. **A. lapponicum** Hedw., *Amphoridium lapponicum* Schimp.

B., l., Nw. (c., suba.). — Fær., frequent. Crevices of rocks, from the sea-shore to ab. 500 m. Commonly fr. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

245. **Glyphomitrium polyphyllum** (Dicks.) Milt., *Ptychomitrium polyphyllum* Fühnr.

B., Nw. (Atl., suba.). — Fær., rare. On exposed rocks and stones near the coast. Fær., fr., according to a specimen labelled »*Orthotrichum crispum*, Færö 1831« without the name of the discoverer. Syd.: Between Tvera and Frodebö, on rocks, 70 m., barren (J. H.). Sandö: At Sandsvatn, fr. (!). Nolsö: East side of the isle, fr. (O.).

246. **G. Daviesii** (Dicks.) Brid.

B. (Atl.). — Fær., rare. On exposed rocks and stones from the sea-shore to ab. 200 m. Always fr. Fær., according to a specimen labelled »Færö 1831«. Syd.: Near Trangisvaag (!). Sandö: At Sandsvatn (!). Str.: Gliversrejn (!). Nolsö: East side of the isle (O.).

247. **Grimmia canescens** (Timm.) C. Müll., *Racomitrium canescens* Brid., *G. ericoides* var. *canescens* Lindb.

B., l., Nw. (c.). — Fær., very rare. Notified by T. Sandö: At Sandsvatn (J. H.). Str.: Below Örfesfjæld (!). Fuglö (O.).

Var. **ericoides** (Schr.) C. Müll., *Grimmia ericoides* Lindb.

B., l., Nw. (c.). — Fær., common. On the ground, rare in low-lying parts, common above 300 m. Fr. rare. First discovered by Lb. Syd. (fr.); Sandö; Vaagö (fr.); Myggenæs; Str. (fr.); Öst. (fr.); Nordreöer.

Var. **epilosa** H. Müll.

Str.: Between Nordredal and Öreenge (!). Öst.: Grönaskardskil between Skaalebotn and Andefjord, fr.; Slattaratinde (Lb., !).

248. **G. hypnoides** (L.) Lindb., *Racomitrium lanuginosum* Brid.

B., l., Nw. (c.). — Fær., everywhere and abundant. From the sea-shore to the summits of mountains. Fr. not rare. Recorded by Svabo, Landt and T. Syd. (fr.); St. Dimon; Sandö (fr.); Hestö; Vaagö (fr.); Myggenæs; Str. (fr.); Nolsö; Öst.; Norderöer.

Somewhat variable in size, density of the tufts, direction of the leaves, length of the hair point. Forma *falcata* Boul. is common, and it is principally this form which has been found with fruit.

249. **G. fascicularis** (Schr.) C. Müll., *Racomitrium fasciculare* Brid.

B., l., Nw. (w. c.). — Fær., very common. On stones and rocks, from the sea-shore to the summits of mountains. Fr. common. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

250. *G. heterosticha* (Hedw.) C. Müll., *Racomitrium heterostichum* Brid.

B., I., Nw. (w. c.). — Fær., frequent. On stones and rocks in low-lying parts of the isles. Commonly fr. Notified by T. Syd.; Sandö; Vaagö; Str.; Öst.; Kalsö; Bordö.

251. *G. affinis* (Schleich.) Lindb., *Racomitrium heterostichum* var. *alopecurum* Hüb., Schimp.

B., Nw. (w. c., suba.). — Fær., rare. On stones and exposed rocks in sunny places. Fær., fr. (Lb.). Syd.: Near Hove, barren (O.). Str.: Between Thorshavn and Hvidenæs, barren (!). Öst.: fr. (R.); at Toftevatn, barren (J. H.).

A specimen gathered by Lb. is labelled »Summit of Skjælling«, which doubtless is an error, in spite of his great accuracy.

252. *G. acicularis* (L.) C. Müll., *Racomitrium aciculare* Brid.

B., I., Nw. (w. c.). — Fær., frequent. On rocks and stones by streams and on lake-shores from the sea-shore to ab. 400 m. Commonly fr. First discovered by Landt. Syd.; Sandö; Hestö; Vaagö; Str.; Öst.; Nordreöer.

253. *G. patens* (Dicks.) Br. eur., *Racomitrium patens* Hüb., *Dryptodon patens* Brid.

B., I., Nw. (w. c., suba.). — Fær., frequent. On stones and rocks and on the ground, from the sea-shore to the summits of mountains. Only barren. Syd.: Kvannefjæld; at Famienvatn; near Trangisvaag.; Præstefjæld (!). Sandö: (R.); between Sand and Skopen (!). Hestö (R.); Vaagö (R.). Str.: Thorshavn (R.); between Nordredal and Öreenge (!); Öreenge and Gjanöre (J. H.). Öst.: At Toftevatn (Lb., J. H.). Kalsö; Blankeskaalefjæld (J. H.). Kunö (J. H.). Bordö: Klakken; Graverdal (!) Gjerdumrejn (O. et J. H.).

In higher parts of the mountains it often grows very abundantly on the ground, where the tufts sometimes reach a height of more than 15 centim.

254. *G. elliptica* (Turn.) Arn., *Racomitrium ellipticum* Br. eur.

B., I., Nw. (Atl., suba.). — Fær., common. On moist, gravelly ground, from the sea-shore to the summits of mountains, abundant at the height of 200—400 m. Fr. common. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

255. *G. ovalis* (Hedw.) Lindb., *G. ovata* Web. et Mohr. et aut. p. p.

B., I., Nw. (c., suba.). — Fær., very rare. Str.: Gliversnæs near Thorshavn, fr. (R.).

»*Grimmia ovata*« is notified by T.

256. *G. trichophylla* Grev.

B., Nw. (w. c.). — Fær., very rare. On stones in low-lying parts of the isles. Only barren. St. Dimon, ♀ (!). Str.: At Thorshavn, ♀ (!). Öst.: At Toftevatn, ♀ (J. H.).

257. *G. pulvinata* (L.) Sm.

B., Nw. (c.). — Fær., very rare. Near the sea. Notified by T Vaagö: Midvaag, on a wall, barren (!). Str.: Thorshavn, fr. (R.).

258. *G. microcarpa* (Gmel.) Lindb., *Racomitrium sudeticum* Br. eur.

B., I., Nw. (c., suba.). — Fær., common. On rocks and stones, on gravelly ground, from the sea-shore to the summits of mountains. Fr. common. First discovered by Lb. Syd.; Sandö; Hestö; Vaagö; Str.; Öst.; Nordreöer.

259. *G. funalis* (Schwægr.) Schimp., *G. spiralis* Hook.

B., I., Nw. (c., suba.). — Fær., very rare. On exposed rocks, below 100 m. Only barren. Vaagö: Midvaag (!). Str. (R.). Öst.: Near Ejde (Sm., !).

260. *G. torquata* Hornsch.

B., I., Nw. (w. c., suba.). — Fær., very rare. On stones and rocks in shady places near the coast. Only barren. Str.: Vestmanhavngjov (!). Nolsö: East side of the island (O.). Öst.: Götegjov (!).

261. *G. maritima* Turn., *Schistidium maritimum* Br. eur., Limpr.

B., I., Nw. (Atl.). — Fær., very common. On rocks, especially abundant on the sea-shore. Fr. common. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

262. *G. apocarpa* (L.) Hedw., *Schistidium apocarpum* Br. eur. Limpr.

B., I., Nw. (c.). — Fær., frequent. On stones and rocks, from the sea-shore to the summits of mountains. Fr. common. First discovered by Lb. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

263. *G. gracilis* Schleich., *Schistidium gracile* Limpr.

B., Nw. (c.). — Fær., not frequent. On rocks and stones from the sea-shore to ab. 200 m. Fr. common. Syd.: (Lb.); Vaag; Famienvatn; near Trangisvaag; Kvanhaugen; Kaaregjov and Præstefjæld near Kvalbø (!). Sandö: At Sandsvatn (!). Myggenæs (!). Str.: Thorshavn (R.); Snejsen near Kvig (Lb.). Nolsö (R., O.). Kalsö: At Syderdal (J. H.).

Var. *rufescens* v. n. Forma *rufescens* Limpr.?

In dense, reddish brown, often expanded, 2—5 centim. high tufts, leaves remotely but coarsely toothed and very rough on the back of nerve toward apex.

On rocks and moist, gravelly ground, from ab. 200 m. to the summits of mountains, especially frequent on the ground among rocks near the summit. Fr. common. Syd.: Sumbö; Lopra; Kvannefjæld (!); near Hove (J. H.); Örnefjæld; near Trangisvaag (!). Sandö: Between Sand and Skopen; summit of Tinden (!). Vaagö: Rensatinder, near the summit (!). Str.: Gjoverbotn near Lejnum (!); summit of Snejsen near Kvivig (Lb.). Öst.: Stölafljæld and Grönaskardskil (!). Bordö: Between Aerne and Strand (!).

264. **G. alpicola** Sw. var. **rivularis** (Brid.) Wahlenb., *Schistidium alpicola* var. *rivularis* Limpr.

B., I., Nw. (c., suba.). — Fær., rare. On rocks and stones in streams and on lake-shores, below 100 m. Always fr. Syd.: Famienvatn; near Trangisvaag (!). Öst.: Götégjov; near Fuglefjord; near Gjov (!).

265. **Andreæa alpina** (L.) Sm.

B., I., Nw. (Atl., suba.). — Fær., common. On gravelly ground, from the coast to the summits of mountains, abundant at the height of 250—500 m. Fr. frequent. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Öst.; Bordö.

266. **A. petrophila** Ehrh.

B., I., Nw. (c., suba.). — Fær., common. On rocks and stones, from the sea-shore to the summits of mountains. Fr. frequent. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

»*Andreæa nivalis*« is recorded from Fær. by T., but no specimens have been met with in the collections. »*A. rupestris*«, notified by T., probably may be referred to *A. petrophila*.

267. **Thuidium tamariscifolium** (Neck.) Lindb., *T. tamariscinum* Br. eur.

B., Nw. (w. c.). — Fær., common. On mossy and grassy ground, from the sea-shore to ab. 500 m. Only barren. First discovered by Lb. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

The ramification of the Færøese specimens often appears to be only bipinnate, the ramuli of the third class are very short and partly hidden amongst the leaves.

268. **T. delicatulum** (L., Hedw.) Mitt.

B., I., Nw. (c.). — Fær., not rare. On mossy and grassy ground, below 500 m. Only barren. Syd.: Near Famienvatn; Örnefjæld; near Trangisvaag; Præstefjæld (!). Vaagö: Rensatinder; Thormansgjov (!). Str.: Saxendal (!). Öst.: Götégjov; Slattaratinde; near Ejde (!). Bordö: Above Strand (!).

Although the apical cells of the ramuline leaves of all the Færøese specimens resemble the description and figures of the

apical cells of *T. recognitum*, the perichaetial bracts, wherever they occur, are furnished with long cilia as in *T. delicatulum*.

Thuidium recognitum is notified by Kindberg, and »*Hypnum viliculosum*« by Landt.

269. *Amblystegium filicinum* (L.) Lindb., *Hypnum filicinum* L.

B., I., Nw. (c.). — Fær., frequent. On wet ground and rocks near streams, below 300 m. Fr. very rare. Notified by Landt and T. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs (fr.); Str.; Nolsö; Öst.; Bordö.

Somewhat variable in size, habit and colour, often more or less slender and irregularly branched.

270. *A. serpens* (L.) Br. var. *litoralis* v. n.

In soft, yellowish- or bright-green tufts; cauline leaves ovato-lanceolate, acuminate, nerved $1/2-2/3$, near the base with feebly toothed margins, subsquarrose as in *A. Juratzkæ*, but the cells rhomboid-hexagonal above and rectangular at base, the angular subquadrate, often with a yellowish or fulvescent tinge.

On the ground near the coast, rare. Syd.: Vaag (Lb.); Skarvetange near Frodebö (O.); Kvalbö (Lb.); Kvalbö-Ejde, fr. (!). St. Dimon (!). Vaagö: Near Bosdalfos, fr. (!). Nolsö (R).

271. *A. protensum* (Brid.) Lindb., *Hypnum stellatum* var. *protensum* Röhl.

B. (Sweden). (c.). — Fær., not rare. On moist grassy and mossy ground among rocks and stones, from the sea-shore to the summits of mountains. Only barren. Syd.: Near Trangisvaag; Kvanhaugen (!). Vaagö: Rensatinder (!). Str.: Gjoverbotn; Lejnum; summit of Skjællingfjæld (!). Öst.: Eastern declivity of Trelavandsskard (!). Bordö: Klaksvig; Graverdal; near Aærne; above Strand (!).

272. *A. stellatum* (Schreb.) Lindb., *Hypnum stellatum* Schreb.

B., I., Nw. (c.). — Fær., frequent. On wet ground, usually among other mosses, from the sea-shore to ab. 300 m. Only barren. Syd.: Sumbö; near Famienvatn; Örneffjæld; near Trangisvaag; Kvanhaugen (!); below Præstefjæld (O.). Sandö: On the mountains Tinden and Knejsen; at Sandsvatn; between Sand and Skopen (!). Vaagö: Midvaag; Thor-mansgjov; between Sörvaagsvatn and Fjatlavtn (!). Myggenæs (!). Str.: Between Nordredal and Öreenge; Gjoverbotn and Lejnum; near Vestmanhavn (!). Öst.: Solmunde; Glivre; Göte; between Skaalebotn and Andefjord; Fuglefjord; Gjov; Ejde (!). Bordö: Graverdal; near Aærne and above Strand (!).

273. *A. polygamum* Br. eur., *Hypnum polygamum* Wils.

B., I., Nw. (c.). — Fær., rare. On moist ground near the coast. Only barren. Syd.: Skarvetange near Frodebö (O.). Sandö: Shore of Saltvigsvatn (!). Str.: Near Thorshavn (!). Öst.: Mölen (!).

274. **A. glaucum** (Lam.) Lindb., *Hypnum commutatum* Hedw.

B., I., Nw. (c.). — Fær., very rare. On moist rocks in clefts. Fr. rare. Syd.: (R.); Vaag. fr. (Lb., Sm., !). Str.: Vestmanhavn (R.). Öst.: Götegvov (!).

275. **A. falcatum** (Brid.) De N., *Hypnum falcatum* Brid.

B., I., Nw. (c.). — Fær., rare. On wet or boggy ground by springs and rills, below 200 m. Only barren. Syd.: Præstefjæld (!); sea-shore near Kvalvig (O.). Str.: Gjøverbotn near Lejnum (!). Bórdö: Graverdal (!).

276. **A. intermedium** Lindb., *Hypnum intermedium* Lindb.

B., I., Nw. (c.). — Fær., rare. On wet or boggy ground, not above 300 m. Only barren. Syd.: Between Famienvatn and Örnefjæld, 300 m. (!). Öst.: Between Skaalebotn and Andelfjord, ♀ (!). Bórdö: Graverdal, ♂ (!).

277. **A. revolvens** (Sw.) De N., *Hypnum revolvens* Sw.

B., I., Nw. (c., suba.). — Fær., common. On wet, spongy or boggy ground, from the sea-shore to ab. 400 m. Fr. not rare. First discovered by R. Syd.; Sandö; Hestö; Vaagö; Str.; Öst.; Bórdö.

Very variable in size and colour. A beautiful form, very robust, glossy yellowish green, partly tinged with purple, I have gathered in Snaldansfjæld (Vaagö) and named forma *magnifica*.

278. **A. aduncum** (L.) Lindb., *Hypnum uncinatum* Hedw.

B., I., Nw. (c.). — Fær., common. On the ground, on stones and rocks, from the sea-shore to the summits of mountains. Fr. rare. Notified by T. Syd. (fr.); St. Dimon; Sandö; Vaagö (fr.); Myggenæs; Str. (fr.); Öst.; Nordreöer.

Very variable in size and ramification.

Var. *majus* v.n. is an interesting form, robust, 10—20 centim. high, slender, sparingly and shortly ramulose, usually straw-coloured, with deeply sulcate leaves and few, somewhat yellowish and incrassate angular-cells.

B., I., Nw. (c., suba.). — Fær., frequent. On exposed rocks, especially on the summits of mountains where it covers the surface, often associated with *Hylocomia* and *Antitrichia curtipendula*. Only barren. Syd.: (R.); Rejabakka (O.); Kvannefjæld; Örnefjæld; near Trangisvaag; Præstefjæld (!). St. Dimon (!). Sandö: Summit of Tinden; Skorene (!). Hestö (R.). Vaagö: Rensatinder; Snaldansfjæld (!). Str.: Between Nordredal and Öreenge (!). Öst.: Summit of Stölafjæld; near Ejde (!). Bórdö: Höjefjæld (Sm.).

279. **A. purpurascens** (Schimp.), *Hypnum exannulatum* var. *purpurascens* Schimp., *Hypnum purpurascens* Limpr.

B., I., Nw. (c.). — Fær., not rare. On boggy ground, from the sea-shore to ab. 400 m. Syd.: Famienvatn; near Trangisvaag (forma) (!).

Sandö: Tindefjæld (forma) (!). Str.: Near Nordredal (f. *submersa*; between Nordredal and Öreenge; below Örvesfjæld (!). Öst.: Near Nordregöte; near Bredaskard, fr.; near Ejde (forma) (!). Bordö: Gjerdum (!).

280. **A. fluitans** (L.) De N., *Hypnum fluitans* L.

B., I., Nw. (c.). — Fær., very rare. On boggy ground. Syd.: Vaags Ejde; near Ördevig, fr. (!). Bordö: Skorene near Gjerdumrejn (forma *submersa*), 350 m. (O.).

Var. **pseudostramineum** (C. Müll.), *Hypnum pseudostramineum* C. Müll., Limpr.

Nw. (c.). — Fær., very rare. Syd.: Vaags Ejde, on boggy ground near the lake, fr. (!).

281. **A. Kneiffii** Br. eur., *Hypnum aduncum* Hedw. (ex p.).

B., I., Nw. (c.). — Fær., very rare. Sandö: Near Trödum, on boggy ground, barren (!).

»*Hypnum aduncum*« is notified by T.

282. **A. scorpioides** (L.) Lindb., *Hypnum scorpioides* L.

B., I., Nw. (w.c.). — Fær., frequent. On wet or boggy ground, especially by rills, from low-lying parts to ab. 300 m. Fr. rare. First discovered by Lb. Syd. (fr.); Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Somewhat variable in size and colour. Below Örnefjæld (Syd.) I found a robust, blackish-purple form.

283. **A. Smithii** (Sw.) Lindb., *Hypnum arcticum* Som.

B., I., Nw. (alp. arct.). — Fær., very rare. On rocks in mountain streams, ab. 200—300 m. Only barren. Sandö: Near Skopen (!). Str.: Between Nordredal and Öreenge (!); Skjællingfjæld (Lb.). Bordö: Graverdal (!).

284. **A. dilatatum** (Wils.) Lindb., *Hypnum dilatatum* Wils.

B., I., Nw. (c., suba.). — Fær., very rare. On stones in streams near the coast. Öst.: Götegjov, fr.; near Fuglefjord, fr. (!).

285. **A. ochraceum** (Turn.) Liudb., *Hypnum ochraceum* Turn.

B., I., Nw. (c., suba.). — Fær., frequent. On stones and rocks in streams, from the sea-shore to ab. 400 m. Only barren. Syd.: Trangisvaag (f. *uncinata*), (!). Sandö (!). Vaagö: (f. *uncinata*), (R.). Str.: Thorshavn (R.); Sandegjærde; near Nordredal (!); near Skjællingfjæld (Lb.); Vestmanhavngjov and below Örvesfjæld (f. *uncinata*), (!). Öst.: Götegjov (partly f. *uncinata*); Grönaskardskil (partly f. *uncinata*); near Gjov; near Ejde (f. *julacea*); Mölen (!). Bordö: Graverdal (!).

A polymorphous species, which also in Fær. possesses a great ability of forming variation. The most remarkable form is the forma *uncinata* with falcato-secund leaves.

286. **A. palustre** (Huds.) Lindb., *Hypnum palustre* Huds.

B., I., Nw. (c.). — Fær., very rare. On wet rocks, now and then overflowed by water, in clefts and on banks of streams, not above 100 m. Always fr. Syd.: Vaag (!). Sandö: Near Skopen (!). Str.: Vestmanhavngjov (!).

Var. **subsphaericarpon** (Schleich.) Lindb.

B., I., Nw. (w.c., suba.). — Fær., very rare. In similar places as the type. Always fr. Syd.: Vaag; near Tværaa, 300 m. (!); near Trangisvaag (O. 1895). Str.: Vestmanhavngjov (!).

287. **A. eugyrium** (Schimp.) Lindb. var. **Mackayi** Schimp., *Hypnum Mackayi* Breidl.

B. (Atl.). — Fær., not rare. On stones and rocks near streams and on lake-shores, from low-lying parts to ab. 500 m. Syd.: Famienvatn (!). Vaagö: East side of the island (!). Str.: Vestmanhavngjov, fr. (!). Öst.: Slattaretinde (!). Bordö: Graverdal (!).

288. **A. giganteum** (Schimp.) De N., *Hypnum giganteum* Schimp.

B., I., Nw. (c.). — Fær., very rare. Borders of rills in boggy places, up to 400 m. Syd.: Punthavn; near Trangisvaag, fr. (!). Öst.: Near Bredaskard, 400 m. (!).

289. **A. cordifolium** (Hedw.) De N., *Hypnum cordifolium* Hedw.

B., I., Nw. (c.). — Fær., very rare. Boggy ground near the coast. Öst.: Mölen near Ejde, barren (Sm., !).

290. **A. sarmentosum** (Wahlenb.) De N., *Hypnum sarmentosum* Wahlenb.

B., I., Nw. (c., suba.). — Fær., very common. On moist or spongy ground, from the sea-shore to the summits of mountains. Fr. rare. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

Very variable in size and colour, reddish or reddish-brown forms are common on moist ground, black-purple, often robust forms, and tall, caespitose, green and reddish variegated forms rare.

291. **A. stramineum** (Dicks.) De N., *Hypnum stramineum* Dicks.

B., I., Nw. (c.). — Fær., very rare. On boggy ground. Öst.: Between Skaalebotn and Andefjord, 220 m., barren (!).

292. **A. trifarium** (W. M.) De N., *Hypnum trifarium* W. M.

B., Nw. (c.). — Fær., very rare. Öst.: Near Bredaskard, amongst *Potamogeton polygonifolius* in a small muddy pool, 400 m. (!).

293. **Hypnum purum** L.

B., I., Nw. (w.c.). — Fær., frequent. On moist ground amongst other mosses, from the sea-shore to ab. 600 m. Only barren. First

discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

Stems usually somewhat flexuose, the innovations simple or with a few branches here and there.

294. **H. prælongum** L., *Eurynchium Stockesii* Br. eur.

B., I., Nw. (w. c.). — Fær., common, especially on cultivated ground amongst grass and moss, or on the ground among rocks and in crevices of rocks, from the sea-shore to ab. 300 m. Fr. very rare. Syd. (fr.); St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

Var. **Stockesii** (Turn.) Brid.

In moist, shady places among rocks in clefts and among large stones, from the coast to ab. 300 m. Syd.: Vaag (Sm.); at Famienvatn; Örnefjæld (!). Str.: Vestmanhavngjov (F. B.); Thorshavn (R.). Nolsö: East side (O.). Öst.: Svinaa (O.).

295. **H. Swartzii** Turn., *Eurynchium prælongum* var. *atrovirens* Br. eur., *Eurynchium Swartzii* Curn.

B., Nw. (c.). — Fær., frequent. On moist grassy and mossy ground, among rocks and in crevices of rocks, from the sea-shore to ab. 400 m. Only barren. Syd.: Vaag (Sm., !); near Tværaa and Trangisvaag (!); north side of Skaalefjæld near Kvalvig (O.). Vaagö: Near Kvilchinnvatn (!). Str.: Kirkebö and Thorshavn (R.); Vestmanhavngjov (F. B.); near Lejnumvatn; Saxendal (!). Öst.: Stölafljæld; Göteggjov; Gjov; Mölen (!). Bordö: Graverdal (!).

Variable in size, habit and density of the tufts. Commonly forming low, yellowish green patches.

296. **H. hians** Hedw. var. **distans** (Lindb.), *Hypnum distans* Lindb., *Eurynchium distans* Limpr.

B., Nw. (c.). — Fær., very rare. On the ground near the coast. Only barren. Syd.: Trangisvaag (O. 1895); Frodebö (!).

297. **H. piliferum** Schreb., *Eurynchium piliferum* Br. eur.

B., I., Nw. (c.). — Fær., very rare. Near the coast. Str.: Vestmanhavngjov, barren ♀ (!).

298. **H. rusciforme** Neck., *Rhynchostegium rusciforme* Br. eur.

B., I., Nw. (c.). — Fær., frequent. On stones and rocks in streams, from the sea-shore to ab. 300 m. Fr. very rare. First discovered by Lb. Syd.; Sandö; Str.; Nolsö; Öst. (fr.); Bordö.

Var. **atlanticum** Brid.

Syd.: Near Famienvatn and Trangisvaag (!). Str.: Kirkebö (!). Bordö: Graverdal (!).

»*Hypnum velutinum*« is recorded by T. A specimen gathered by Lb. and labelled »*Hypnum velutium?*« belongs to *Isothecium tenuinerve*.

299. **H. pseudoplumosum** Brid., *Brachythecium plumosum* Br. eur.

B., I., Nw. (c.). — Fær., common. On rocks and stones, on lake-shores and clefts, by streams, from the sea-shore to the summits of mountains. Fr. frequent. First discovered by R. Jensen. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Str.; Öst.; Nordreöer.

Polymorphous. Below Örnefjæld (Syd.) I gathered a peculiar form, green above, fuscous below, with erect, slender, flexuose, sparingly branched stems in dense cushions and with abundant fruit; from Vaagö I have seen a somewhat similar form, gathered by R. Jensen and named by Th. Jensen »*Brachythecium populeum* var. *major*«.

300. **H. viride** Lam., *Brachythecium populeum* Br. eur.

B., I., Nw. (c.). — Fær., very rare. On moist rocks in clefts, near the sea-shore. Always fr. Syd.; Vaag; near Kvalbø (!). Öst.: Ejde (!).

301. **H. rutabulum** L., *Brachythecium rutabulum* Br. eur.

B., I., Nw. (c.). — Fær., frequent, especially on cultivated ground, from the sea to ab. 200 m. Only barren. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Öst.; Bordö.

Var. *flavescens* Br. eur.

B.?, Nw. (c.). — Fær., rare. On moist cultivated ground near the sea. Fr. rare. Syd.: Frødebø, fr. (!). St. Dimon, barren (!). Sandö: Trødum, barren (!).

302. **H. rivulare** Bruch., *Brachythecium rivulare* Br. eur.

B., I., Nw. (c.). — Fær., common. In moist places on rocks and stones, in streams and rills, etc., abundant from the sea-shore to ab. 500 m. Only barren. First discovered by Lb. Syd.; Sandö; Vaagö; Str.; Nolsö; Öst.; Bordö.

A polymorphous species, sometimes with the stem long and sparingly branched, sometimes in low tufts or patches with closely dendroid ramification. Most peculiar is the forma *falcata* of var. *cataractarum*, which puts one in mind of some forms of *Amblystegium Sendtneri* or *Kneiffii*.

Var. *cataractarum* Saut.

On stones in streams, rare. Vaagö: Thormansgjøv (!). Öst.: Near Ejde; near Gjøv (f. *falcata*), (!). Bordö: Graverdal (!).

303. **H. Mildeanum** Schimp., *Brachythecium Mildeanum* Schimp.

B., I., Nw. (c.). — Fær., very rare. On moist, sandy ground near the coast. Sandö: Near Trødum, barren (!).

304. **H. albicans** Neck., *Brachythecium albicans* Br. eur.

B., I., Nw. (w.e.). — Fær., very rare. On somewhat dry, sandy ground, near the coast. Only barren. Sandö: Near Tröðum (!). Str.: Kirkebö (R.).

»*Hypnum plumosum*« and »*Hypnum lutescens*« are recorded by T., and *Camptothecium nitens* by Kindberg.

305. **H. sericeum** L., *Homalothecium sericeum* Br. eur.

B., I., Nw. (c.). — Fær., frequent. On stones and rocks in the low-lying parts of the isles, on moist gravelly ground in higher parts of the mountains, to ab. 500 m. Fr. rare, only found in low-lying regions. First discovered by Lb. Syd. (fr.); St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

The specimens from the higher regions resemble somewhat in habit *Hypnum lutescens* Huds., but the stems are erect and irregularly branched.

306. **Lesquereuxia patens** Lindb., *Pseudoleskea patens* Limpr.

B., I., Nw. (w.c., suba.). — Fær., very rare. Öst.: Slattaretinde, on a moist, vertical wall of rock with northern aspect, ab. 600 m., barren ♀ (!).

307. **Isothecium myosuroides** (L.) Brid., *Hypnum myosuroides* L., *Eurynchium myosuroides* Schimp.

B., I., Nw. (Atl.). — Fær., frequent. On stones and rocks in the low-lying parts of the isles to ab. 200 m. Fr. very rare and only found 1831, by an unknown collector. Syd.: Vaag (!); Hove and Frodebö (J.H.); Kvanhaugen (!). Sandö: Near Grothusvatn and Sandsvatn; between Sand and Skopen (!) at Holsavatn (J.H.). Myggenæs: Kolvaldal (!). Str.: Varden near Thorshavn (R.); Gliversrejn; near Lejnumvatn; Gjoverbotn (!); Kalbakbotn (Sm.); Vestmanhavn-Gjov (F.B.). Nolsö: East side (O.). Öst.: Næs (R.); Toftevatn (J.H.). Bordö: Klakken (!); near Bordövig (J.H.).

308. **J. tenuinerve** Kindb., *J. myurum* var. *piliferum* Fær. Flora.

I. (Sweden according to Kindb.), probably B. and Nw. (Atl.). — Fær., very common. On the ground, on stones and rocks, from the sea-shore to the summits of mountains, especially abundant on the ground amongst other mosses such as *Hylocomia*, *Grimmia hypnoides*, etc. Only barren. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Very variable in size and habit, but all the forms agree with regard to the stem- and branch-leaves, which are ovate, with a long, often piliform acumen. In *J. myosuroides* the stem-leaves are subcordate and in *J. viriparum* the acumen is very short. The species is closely allied to the latter, but possesses a peculiarly, soft habit, because of the filiform leaf-points. The ramification is also more simple and irregular, rarely dendroid as in the two other species.

309. *J. viviparum* (Neck.) Lindb., *J. myurum* Brid.

B., Nw. (c.). — Fær., rare. On rocks and larger stones in clefts and lake-shores, in low-lying parts of the isles to ab. 200 m. Only barren. Syd.: Vaag; shore of Famienvatn; near Trangisvaag (!). Nolsö: The east side (O.).

310. *Myurella julacea* (Vill.) Br. eur., *Hypnum moniliforme* Wahlenb.

B., I., Nw. (c., suba.). — Fær., rare. Crevices of rocks at 200—600 m. Only barren. Syd.: Near Tværaa and Trangisvaag, 200—300 m. Kalsö: Blankeskaalefjæld, 600 m. (J. H.). Fuglö: 300—600 m. (O.).

311. *Heterocladium heteropterum* (Bruch) Br. eur.

B., Nw. (w. c., suba.). — Fær., not rare. On rocks and stones in low-lying parts of the isles. Only barren. Syd.: Vaag (Sm., !); Famienvatn (!); Hove (J. H.). Sandö: At Grothusvatn (!). Myggenæs: Kolvadal (!). Str.: Gliversrejn (!); Vestmanhavngjov (F. B.). Öst.: Næs (R.); Götegjov (!).

312. *Hylocomium umbratum* (Ehrh.) Br. eur.

B., Nw. (c., suba.). — Fær., rare. Among other mosses in shady places on banks near streams on mossy declivities, among stones, only in high parts of the isles, to ab. 550 m. Only barren. Vaagö: Near Kvilchinavatn (!). Str.: Near Nordredal; below Örvessfjæld (!). Öst.: Grönaskardskil and Slattaratinde (!).

313. *H. pyrenaicum* (Spruc.) Lindb., *H. Oakesii* (Sull.) Br. eur.

B., I., Nw. (c., suba.). — Fær., very rare. Öst.: Between Skaalebotn and Andefjord, sparingly and barren amongst *H. brevirostre* on a mossy declivity with western aspect, ab. 300 m. (!).

314. *H. brevirostre* (Ehrh.) Br. eur.

B., Nw. (w. c.). — Fær., not rare. On the ground amongst other *Hylocomia*, from the low-lying parts to ab. 400 m. Only barren. Syd.: Sumbö; Ördevig; near Trangisvaag (!). Vaagö: Thormansgjov; near Kvilchinavatn (!). Str.: Skjællingfjæld (!); the valley near Öreenge (O.). Öst.: Götegjov; between Skaalebotn and Andefjord; Fuglefjord (!). Bordö: Klakken and Aærne (!).

315. *H. proliferum* (L.) Lindb., *H. splendens* Br. eur.

B., I., Nw. (c.). — Fær., very common. On the ground, commonly amongst other mosses, from the sea-shore to the summits of mountains, rare on cultivated ground. Only barren. First discovered by Lb. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

316. *H. parietinum* (L.) Lindb., *Hypnum Schreberi* Willd.

B., I., Nw. (c.). — Fær., common. On the ground in similar places as *H. proliferum*. Only barren. According to T. »*Hypnum Schreberi*« has been found by Lb., but no specimen has been met with in the collections. Syd.; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

317. *H. triquetrum* (L.) Br. eur.

B., I., Nw. (c.). — Fær., frequent. On the ground amongst other mosses, from the low-lying parts to the summits of mountains, where it often forms large, pure tufts among rocks. Only barren. According to T. »*Hypnum triquetrum*« has been found by Lb., but no specimens are to be found in the collections. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

318. *H. squarrosus* (L.) Br. eur.

B., I., Nw. (c.). — Fær., common everywhere, often amongst other mosses. Fr. very rare. Notified by Landt. Syd. (fr.); St. Dimon; Sandö; Hestö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

319. *H. loreum* (L.) Br. eur.

B., I., Nw. (w. c.). — Fær., very common, from the sea to the summits of mountains, often amongst other mosses. Fr. rare. Fær., acc. to an old fr. specimen in the Museum of the Botanical Gardens, Copenhagen, discoverers name not given. Notified by T. Syd. (fr.); Sandö; Vaagö (fr.); Myggenæs; Str.; Nolsö (fr.); Öst.; Nordreöer.

320. *Hyocomium flagellare* (Dicks.) Br. eur.

B., Nw. (Atl., suba.). — Fær., frequent. On moist or wet ground and rocks, from low-lying parts to ab. 400 m. Only barren. Syd.: Ördevig; near Trangisvaag; Frodebö (!). Vaagö: Midvaag; the valley between Sörvaagsvatn and the northern part; near Kvilchinavatn (!). Str.: Gjoverbotn; between Kalbakfjord and Öreenge; near Lejnumvatn (!). Vestmanhavn; below Örvessfjæld; Saxendalen (!). Öst.: Göteggjov; near Fugleffjord; near Ejde (!). Bordö: Klakken (!).

Somewhat variable in colour. On wet ground often very abundant, in depressed, reddish-brown and fuscous-green patches. In shady places deep-green.

321. *Ctenidium molluscum* (Hedw.) Mitt., *Hypnum molluscum* Hedw.

B., I., Nw. (c.). — Fær., common. On moist ground and rocks, from the sea-shore to the summits of mountains. Only barren. First discovered by R. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Polymorphous! Near the summits of mountains often caespitose, irregularly branched, with short, erect branches; in low-lying parts of the isles more regularly pinnate, taller, loosely tufted or mixed with other mosses. Colour commonly yellowish, partly reddish or ferruginous or quite fuscous and purplish-brown. The most peculiar form is: —

Var. *subplumiferum* (Kindb.) Limpr., *Hypnum molluscum* var. *procerum* Bryhn.

Nw. (w. c.). — Fær., frequent. In similar places as the type, but

not above 400 m. Syd.: Below Örnefjæld (!). Vaagö: Midvaag; Rensatinder; between Sörvaagsvatn and Fjatlavtn; Snaldansfjæld (!). Str. (R.). Öst.: Götegjov; near Fuglefjord; near Ejde (!). Bordö: Above Strand (!).

»*Hypnum crista-castrensis*« is recorded by T., Bridel-Brideri and H., but no specimen has been met with in the collections. Specimens found by Lb. »in summis rupibus ad Voy« and referred to this species, belong to *Amblystegium glaucum*.

322. *Stereodon cupressiformis* (L.) Brid., *Hypnum cupressiforme* L.

B., I., Nw. (c.). — Fær., frequent. On the ground, on rocks and large stones, from the coast to the summits of mountains. Only barren. Notified by T. Syd.; St. Dimon; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Var. *ericetorum* Br. eur.

B., I., Nw. (c.). — Fær., very common. On the ground amongst other mosses, from the sea-shore to the summits of mountains. Only barren. First discovered by Lb. Syd.; St. Dimon; Sandö; Hestö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Nordreöer.

Subspec. *S. resupinatum* (Wils.), *Hypnum resupinatum* Wils., Limpr.

B., I., Nw. (w. c.). — Fær., frequent. On stones and rocks in low-lying parts of the isles. Only barren. Syd.: Lopra; Vaag; Sumbö (!); Famien (R.); Trangisvaag; Frodebö; Norbes Ejde (!). St. Dimon (!). Sandö: At Sandsvatn; between Sand and Skopen (!). Vaagö: (R.); near Bosdalafof (!). Str.: Kirkebö (R.); Gliversrejn (!). Nolsö: The east side (F. B., O.). Bordö: Near Aærne (!); Bordövig (J. H.).

323. *S. callichrous* Brid., *Hypnum callichroum* Br. eur.

B., I., Nw. (c., suba.). — Fær., frequent. On moist, mossy declivities, from the sea-shore to the summits of mountains. Fr. rare. Syd.: Spinerne; Vaag; near Trangisvaag; Kvanhaugen; Præstefjæld near Kvalbö (!). Vaagö: (R.); Rensatinder; Snaldansfjæld, fr. (!). Str.: Gliversrejn; between Nordredal and Öreenge, common; Skjællingfjæld; below Örvesfjæld (!). Nolsö: The east side (O.). Öst.: (R.); Stölafljæld; Götegjov; mountain-range between Göte and Fundingfjord, common; Slattaretinde; near Ejde (!). Kunö: The summit (J. H.). Bordö: Summit of Klakken; Höjefjæld (O.); Above Strand (!).

324. *S. hamulosus* (Br. eur.) Lindb., *Hypnum hamulosum* Br. eur.

B., Nw. (alp. arct.). — Fær., not rare. On the ground, above 200 m. to the summits of mountains. Only barren. Syd.: Kvannefjæld; near Trangisvaag (!). Vaagö: (R.); Rensatinder (!). Myggenæs: Koivadal (!). Str.: Gjoverbotn and Lejnum (!). Öst.: Between Skaalebotn and Andefjord; near Gjov (!).

According to H. »*Hypnum incurvatum* Schrad.« has been dis-

covered in Fær., but no specimen has been met with in the collections. »*Hypnum revolutum*« is notified by T., he writes that it has been found by Lb.

325. *Isopterygium nitidum* (Wahlenb.) Lindb., *Plagiothecium nitidulum* Br. eur., *Pl. pulchellum* var. *nitidulum* Lesq. and Jam., Limpr.

B., I., Nw. (c., suba.). — Fær., rare. On the ground and in crevices of rocks in shady places, below 300 m. Always fr. Vaagö: Near Bosdalafo (I). Str.: Varden near Thorshavn (R.); Gjoverbotn near Lejnum (I). Bordö: Above Strand (I).

Var. *pulchellum* (Dicks.) Lindb., *Plagiothecium pulchellum* Br. eur.

B., I., Nw. (c., suba.). — Fær., frequent. Crevices of rocks, from low-lying parts of the isles to the summits of mountains. Commonly fr. Syd.: Famienvatn; below Örnefjæld; near Trangisvaag; Kaaregjov (I); Frodebö (R.). Vaagö: (R.); Midvaag; Rensatinder; near Kvilehinavatn (I). Str.: Gjoverbotn; Vestmanhavngjov (I). Öst.: (R.); Stölafjæld; Götegjov (I). Kalsö: Blankeskaalefjæld (J. H.).

326. *I. elegans* (Hook.) Lindb., *Plagiothecium elegans* Sull., Schimp., Limp.

B., Nw. (w. c.). — Fær., very rare. In moist shady places among stones and rocks. Only barren. Syd.: Shore of Famienvatn, ab. 100 m. (I). Str. (F. B.).

The Færøese specimens belong to the more loosely tufted, typical form, with few gemmæ.

327. *Plagiothecium undulatum* (L.) Br. eur.

B., Nw. (Atl.). — Fær., common. On the ground in expanded, somewhat depressed tufts or patches, from the sea-shore to ab. 400 m. Fr. rare. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str. (fr.); Nolsö; Öst. (fr.); Bordö.

328. *P. silvaticum* (Huds.) Br. eur.

B., I., Nw. (c.). — Fær., frequent. On the ground among rocks and in crevices of rocks, from low-lying parts of the isles to the summits of mountains. Fr. somewhat rare. First discovered by Lb. Syd.; Sandö; Vaagö; Myggenæs; Str. (fr.); Öst.; Nordreöer (fr.).

Var. *Roeseanum* (Hamp.) Lindb., Hartm., *Plagiothecium silvaticum* var. *orthocladum* Schimp., *Pl. Roeseanum* Br. eur.

B., I., Nw. (c.). — Fær., rare. On the ground among rocks and in crevices of rocks, from low-lying parts to the summits of mountains. Only barren. Syd.: Sumböfjæld (f. *tenella*); Kvannefjæld (I); near Hove (J. H.); Vaag; near Trangisvaag (I). Öst.: Stölafjæld; Götegjov; eastern declivity of Trelavandsskard; Grönaskardskil between Skaalebotn and Andefjord (I).

329. **P. denticulatum** (L.) Br. eur. var. **Donii** (Sm.) Lindb., *Hypnum Donianum* Sm.

B., Nw. (Atl., suba.). — Fær., very rare. Bordö: Gjerdumrejn, on moist rocks with north-north-easterly aspect, 550 m., fr. (O.).

The leaves of the Færøese specimens have a short apiculus. According to T. the »*Hypnum denticulatum*« has been found by Lb. but no specimen has been met with in the collections.

330. **Acrocladium cuspidatum** (L.) Lindb., *Hypnum cuspidatum* L.

B., I., Nw. (c.). — Fær., common. On wet or boggy ground, from the coast to ab. 400 m. Only barren. Notified by T. Syd.; Sandö; Vaagö; Myggenæs; Str.; Nolsö; Öst.; Bordö.

A small and low form, named »var. *subuliformis* Sch.«, with the apex of stem and branches circinate and very acute, has been gathered in Str. (R.).

331. **Entodon orthocarpus** (La Pyl.) Lindb., *Cylindrothecium concinnum* Schimp.

B., I., Nw. (c., suba.). — Fær., very rare. On moist, exposed rocks in sunny places. Barren. Syd.: Near Trangisvaag, ab. 200 m. (!).

332. **Pterygophyllum lucens** (L.) Brid., *Hookeria lucens* Sm.

B., Nw. (w. c., suba.). — Fær., frequent. On the ground and in fissures of rocks, in pure patches or mixed with other mosses, from low-lying parts to ab. 400 m. Fr. very rare. Notified by Landt and T. Syd.: Lopra; Vaag; Famienvatn; near Ördevig; below Örnefjæld; Præstefjæld, fr. (!); Frodebö (R.). Sandö: Skorene (!). Vaagö: Thormansgjov (!). Str.: Gliversrejn; near Nordredal; Gjoverbotn; Vestmanhavngjov, fr. (!). Öst.: Near Sletteær, fr. (O.); Götegjov; Trelavandsskard; Ejde (!). Bordö: Above Strand (!).

333. **Porotrichum alopecurum** (L.) Mitt., *Thamnium alopecurum* Br. eur.

B., I., Nw. (c.). — Fær., frequent. On rocks and stones in shady places, near streams, in clefts and on lake-shores, from the sea-shore to ab. 400 m. Only barren. First discovered by Lb. Syd.; Vaagö; North Str.; Öst.; Kunö; Bordö.

334. **Climacium dendroides** (L.) W. M.

B., I., Nw. (c.). — Fær., not rare. On grassy and mossy banks and declivities, from the sea-shore to ab. 400 m. Only barren. Syd.: Between Sumbö and Lopra (!); Kirkevatn near Famiën (Lb.); southern declivities of the mountain N. of Tværaa and Trangisvaag (!). Sandö: At Grot-husvatn and Holsavatn; northern declivities of the Sandö-mountains (!). Str.: South side of Skjællingfjæld (!). Öst.: Grönaskardskil; west side of Slattaretinde, ab. 400 m.; near Mölen (!). Viderö: Bergsmunna, 350 m. (O.).

335. *Fontinalis antipyretica* L.

B., I., Nw. (c.). — Fær., frequent. On stones and rocks in streams and on lake-shores, from the sea-shore to ab. 300 m. Only barren. Notified by Landt and T. Syd.; Sandö; Vaagö; Myggenæs; Str.; Öst.; Nordreöer.

Very variable in size, habit and colour. A slender, more or less remotely branched, opaque form with small leaves (f. *tenuior* Cardot) appears to be more frequent than the type.

336. *F. gracilis* Lindb.

B., I., Nw. (c., suba.). — Fær., very rare. On rocks in streams, below 300 m. Only barren. Str.: Mountain W. of Kalbakfjord (!). Öst.: Near Mölen; Fundinggjov (!). Bordö: Skorene at Gjerdumrejn (O.).

»*F. squamosa* L.« is notified by H. and T., but no specimens have been met with in the collections. A specimen labelled »*Fontinalis squamosa*? In rivulis alpestribus ad Thorshavn et Österö« (Lb.) belongs to a form of *Blindia acuta*!

337. *Antitrichia curtipendula* (L.) Brid.

B., I., Nw. (w. c.). — Fær., not rare on exposed rocks on mountain-summits, where it often covers the surface with expanded tufts; in low-lying parts of the isles it is rare and grows here on large stones and exposed rocks, especially in sunny places. Only barren. Syd.: Summit of Sumböfjæld and Örnefjæld; exposed rocks N. of Trangisvaag, ab. 200 m. (!). Sandö: Summit of Tindefjæld; shore of Holsavatn, on large stones, ab. 300 m. (!). Vaagö: Summit of Rensatinder (!). Str.: Near Thorshavn, on large stones (R., Sm.). Öst.: Mountain-summit between Fundingbotn and Andefjord (!); on exposed rocks between Ejde and Mölen, ab. 50 m. (Sm., !). Bordö: Summit of Holgafjæld (O.); Højefjæld, 300 m. (Sm.). Viderö: Mornefjæld, 450 m. (O.). Fugløjfjæld (O.).

338. *Hedwigia albicans* (Web.) Lindb., *H. ciliata* Hedw.

B., I., Nw. (c.). — Fær., very rare. On large stones in low-lying parts of the isles. Always fr. Syd. (R.). Sandö: (R.); near Grothusvatn (!). Str.: Between Thorshavn and Hvidenæs (!).

On account of some incorrect determinations and in accordance with a more modern notion of species, the following corrections to some of the older publications are necessary: —

To no. 4.

Hypnum palustre L. = *Amblystegium ochraceum* (f. *uncinata*).

— *fluitans* L. c. var. pl. = *Amblystegium revolvens* (two specimens in the collections of E. Rostrup).

— *stramineum* Dicks. = *Amblystegium sarmentosum*.

— *aduncum* Sw. = *Amblystegium revolvens*.

Amblystegium serpens (f. *homomalla*) = *Amblystegium serpens* var. *litoralis*.
Plagiothecium denticulatum (L.) Schimp. = *Plagiothecium silvaticum*.
Eurynchium praelongum (L.) Schimp., specimen from Strömö = *Hypnum* Swartzii.

Brachythecium Rutabulum (L.) Schimp. = *Hypnum rivulare*.

— *laetum* (Brid.) Schimp. = — —

— *populeum* (Hedw.) Schimp., specimen from Vaagö (Rev. R. Jensen) = *Hypnum pseudoplumosum*. Specimens from the other places not seen.

Isothecium myurum (Poll.) Brid. var. *pilifera* = *Isothecium tenuinerve*.

Pylaisia polyantha (Schreb.) Schimp. = *Stereodon resupinatus*.

Thuidium delicatulum (L.) Schimp. = *Thuidium tamariscifolium*.

Bartramia fontana (L.) Brid. var. *filiformis* = *Philonotis Ryani*.

Mnium affine Bland. = *Astrophyllum punctatum* and *A. hornum* mixed.

Bryum calophyllum R. Br. = *Pohlia faeroënsis*.

— *cernuum* Hornsch. ? = *Bryum retusum*.

— *cirrhatum* Br. et Sch. = — *pallescent*.

Encalypta rhabdocarpa Schwægr. = *Leersia laciniata*.

Orthotrichum Jutlandicum Brid. = *Weissia maritima*.

Racomitrium canescens (Hedw.) Brid. var. *epilosa* from Skjællingfjæld = *Grimmia fascicularis*. Specimens from Nolsö not seen.

Grimmia apocarpa Hedw. from Nolsö = *Grimmia gracilis*.

Trichostomum rigidulum Sm. = *Ceratodon purpureus*.

Leptodontium flexifolium (Dicks.) Hamp. = *Dichodontium pellucidum*.

— *subalpinum* (De Not.) = *Dichodontium flavescent*.

Dicranum longifolium Ehrh. from Skjællingfjæld = *Dicranum arcticum*.

Sphagnum cymbifolium Ehrh. = { *Sphagnum cymbifolium*.
— *papillosum*.

— *rigidum* Schimp. var. *compacta* = *Sph. subsecundum* var. *Gravetii*.

— *squarrosum* Pers. f. *tenella* = *Sphagnum subnitens* forma.

— *subsecundum* Nees = { var. *inundatum*.
— *Gravetii*.

— — var. *contorta* Brid. = var. *inundatum*.

— — var. *fluitans* = var. *crassicladum*.

— *acutifolium* Ehrh. = *Sphagnum subnitens*.

Alicularia compressa (Hook.) Nees = *Nardia scalaris*.

Scapania nemorosa (L.) Nees from Vestmanhavn and Skjællingfjæld = *Martinellia purpurascens*.

— — — from Hestö = *Martinellia gracilis*.

— — — f. *abnormis* = — —

— *undulata* (L.) Nees var. *subæquiloba* = { *Martinellia purpurascens*.
— *undulata*.

— *uliginosa* (Sw.) Nees from Vardebakken = *Marsupella emarginata* (f. *purpurea*). Specimens from Nolsö not seen.

— *curta* (Mart.) Nees = *Martinellia subalpina*.

Jungermannia acuta Lindenb. from Vestmanhavn = *J. alpestris*.

— — — from Hestö = *J. Mülleri*. Specimens from Vardebakken not seen.

— *minuta* Dicks. var. *tridentata* (?) = *J. quinquecladum*.

— *Schreberi* Nees = *J. Floerkei*.

Jungermannia laxifolia Hook. = *Anthelia julacea* forma.

Sphagnocetis communis Nees from Gliversrejn and Nolsö = *Odontschisma denudatum* var. *elongatum*.

— — — from Hvidenæs = *Nardia scalaris*.

Chiloscyphus polyanthus (L.) Corda = var. *pallescent*.

Radula complanata (L.) Dum. = *Radula commutata*.

Madotheca platyphylla (L.) Dum. from Vestmanhavn = *Porella rivularis*.

Lejeunea serpyllifolia (L.) Lib. = $\begin{cases} \text{Lejeunea cavifolia.} \\ \text{— patens.} \end{cases}$

Pellia epiphylla (L.) Nees = $\begin{cases} \text{Pellia epiphylla.} \\ \text{— Neesiana.} \end{cases}$

Metzgeria furcata (L.) Nees = $\begin{cases} \text{Metzgeria furcata.} \\ \text{— conjugata.} \end{cases}$

Reboulia hemisphaerica (L.) Raddi = *Chomocarpon commutatus*.

Fegatella conica (L.) Raddi from Syd. = *Marchantia polymorpha*.

To no. 6.

Radula Lindbergii Gottsche = *Radula commutata*.

Porella platyphylla (L.) Lindb. = *Porella rivularis* f. *minor*.

Sphagnum Gravetii Russ. = var. *Gravetii*.

Grimmia ramulosa (L.) Lindb. forma ♂ = *Grimmia microcarpa*.

— *aquatica* (Brid.) C. Müll. = *Grimmia acicularis*.

To no. 7.

Hypnum uncinatum Hedw. forma ad var. *orthothecioides* Lindb. = *Amblystegium aduncum* var. *majus*.

— Kneiffii Sch. = *Amblystegium cordifolium*.

— Sendtneri Sch. = *Amblystegium revolvens* forma.

Brachythecium salebrosum Sch. = *Hypnum rivulare*.

Amblystegium riparium B. S. = *Hypnum rivulare*.

Eurynchium praelongum B. S. = *Hypnum Swartzii*.

Climacium dendroides W. M. = *Hypnum rivulare*.

Thuidium recognitum Hedw. = *Thuidium tamariscifolium*.

Fontinalis gracilis Lindb. = *Fontinalis antipyretica* f. *tenuior*.

Mnium cuspidatum Hedw. = *Astrophyllum undulatum*.

Bryum bimum Schreb. = *Bryum ventricosum* var. *atlanticum*.

— *uliginosum* B. S. = *Bryum inclinatum*.

Orthotrichum Sommerfeltii Sch. = *Grimmia acicularis*.

Ulota phyllantha Brid. = *Weissia maritima*.

Grimmia leucophæa Grev. = *Grimmia funalis*.

Trichostomum crispulum Bruch. = *Mollia litoralis*.

Dicranum palustre Brid. = *Dicranum scoparium*.

— Starkii W. M. = *Blindia acuta*.

Gymnostomum curvirostre Hedw. = *Pleurozygodon æstivus*.

Scapania irrigua Es. = *Martinellia purpurascens*.

— rosacea Corda = *Martinellia purpurascens*.

Sphagnoecetis communis Es. = *Jungermania ventricosa* var. *porphyroleuca*.

Radula alpestris Lindb. = *Radula commutata*.
Frullania fragilifolia Tayl. from Hvidenæs and Karegrov = *F. Tamarisci*.
 — — — from Kalbak = *Frullania Jackii*.
Pellia endiviaefolia Dicks. = *Pellia Neesiana*.

To no. 8.

Martinellia undulata = { *Martinellia undulata*.
 — *purpurascens*.
Radula Lindbergii = *Radula commutata*.
Lejeunea cavifolia = { *Lejeunea cavifolia*.
 — *patens*.
Amblystegium intermedium = { *Amblystegium intermedium*.
 — *revolvens*.
Weissia phyllantha = *Weissia maritima*.
Amblystegium uncinatum var. *orthothecioides* = *A. aduncum* var. *majus*.
Sphagnum Gravetii = { var. *Gravetii*.
 var. *inundatum*.
Fontinalis gracilis = { *Fontinalis gracilis*.
 — *antipyretica* f. *tenuior*.
Mollia viridula = *Mollia rutilans*.
Jungermania barbata = { *Jungermania Floerkii* forma.
 — *lycopodioides*.
Jungermania Wenzelii = *Jungermania ventricosa* var. *porphyroleuca* forma.
Porella platyphylla f. *minor* = *Porella rivularis* var. *færoënsis*.
Nardia compressa = *Nardia obovata* forma.
Amblystegium exannulatum = *Amblystegium purpurascens*.

Note to p. 140. Mr. Warnstorff has now adopted the name *Sphagnum rubellum*. (Weitere Beiträge zur Kenntniss der Torfmoose, Botanisches Centralblatt Bd. LXXX, 1900, p. 15).

PHYTO-GEOGRAPHICAL STUDIES

BASED UPON

THE BRYOPHYTA.

BY

C. JENSEN.

THE Færøes (about 1325 □ Kilom.) contain 341 species (incl. 3 subspec.) and 50 varieties. Of the 391 forms: —

226 (ab. 58%) are c.	117 (ab. 30%) are suba.
87 (ab. 22%) are w. c.	23 (ab. 6%) are alp. arct.
52 (ab. 13%) are Atl.	

Of the species, 95 (ab. 28%) are Hepaticae, whereof 4 Marchantiaceae, 12 Jungermaniaceae foliosae pleurogamae, 16 Jungermaniaceae folios. opistogamae, 53 Jungermaniaceae folios. acrogamae and 10 Jungermaniaceae frondosae, besides 19 varieties. Of these 114 forms: —

48 (ab. 42,5%) are c.	33 (ab. 28%) are suba.
37 (ab. 32%) are w. c.	10 (ab. 9%) are alp. arct.
19 (ab. 17%) are Atl.	

17 (5%) species and 3 varieties of Sphagnum, of which 20 forms 12 are c., 8 w. c. and 2 suba.

229 (ab. 67%) Musci frondosi, whereof 156 Acrocarpi and 73 (ab. 32%) Pleurocarpi, besides 29 varieties. Of these forms: —

166 (ab. 64%) are c.	82 (ab. 32%) are suba.
42 (ab. 16%) are w. c.	13 (ab. 5%) are alp. arct.
33 (ab. 13%) are Atl.	

Probably new to science and hitherto only known from the Færøes are: —

Porella rivularis var. *færoënsis*, *Jungermania alpestris* var. *amphigastriata*, *Astrophyllum undulatum* var. *cuspidatum*, *Bryum ventricosum* var. *atlanticum*, *Pohlia færoënsis*, *Campylopus Schimperii* var. *flagellifera*, *Anisothecium crispum* var. *atlanticum*, *Amblystegium serpens* var. *litoralis*. *Amblystegium aduncum* var. *majus* has hitherto

often been referred to the var. *orthothecoides* of this species, and *Grimmia gracilis* var. *rufescens* is doubtless identical with f. *rufescens* Limpr.

The Færøes possess in common with Britain 338, with Norway 330, with Iceland 229 and with N. America 271 species and varieties.

Indigenous in Britain and the Færøes, but not met with in Iceland and Norway are: —

<i>Lejeunea microscopica</i> ,	<i>Mollia tortilis</i> ,
<i>Mastigophora Woodsii</i> ,	<i>Barbula brevifolia</i> ,
<i>Jamesoniella Carringtonii</i> ,	— — var. <i>acutifolia</i> ,
<i>Metzgeria hamata</i> ,	— <i>reflexa</i> ,
<i>Bryum fallax</i> ,	— <i>fallax</i> ,
<i>Diphyscium sessile</i> var. <i>acutifolia</i> ,	<i>Dichodonium flavescens</i> ,
<i>Pottia crinita</i> ,	<i>Glyphomitrium Daviesii</i> ,
<i>Mollia flavovirens</i> ,	<i>Amblystegium eugyrium</i> var. <i>Ma-</i>
— <i>brachydonia</i> ,	<i>ckayi</i> .

Of these 17 four are c., 3 w.c. and 10 Atl. All attain their northern limit in the Færøes.

A single species, *Dicranum Anderssonii*, has hitherto only been found in Lapland (ab. 67° N. lat.).

The following have been found in Iceland and Norway, but probably not in Britain: —

<i>Jungermania obtusa</i> ,	<i>Bryum micans</i> ,
— <i>Wenzelii</i> ,	— <i>retusum</i> ,
— <i>atlantica</i> ,	— <i>lapponicum</i> ,
<i>Nardia subelliptica</i> ,	<i>Dicranum albicans</i> ,
<i>Astrophyllum medium</i> ,	<i>Philonotis Ryani</i> ,

whereof 1 c., 2 w.c., 3 alp. arct. and 4 (*Jungermania atlantica*, *Bryum retusum*, *B. lapponicum* and *Philonotis Ryani*) Atl. *Jungermania atlantica* and *Philonotis Ryani* first attain here their northern limit of distribution.

The following have been found in Britain and Norway, but not as yet in Iceland: —

<i>Frullania Tamarisci</i> var. <i>robusta</i> ,	<i>Lejeunea cavifolia</i> var. <i>planiuscula</i> ,
n.l. — <i>Jackii</i> ,	n.l. <i>Radula aquilegia</i> ,
<i>Lejeunea calcarea</i> ,	— <i>commutata</i> ,
n.l. — <i>patens</i> ,	n.l. <i>Porella Thuja</i> ,

- n.l. *Pleurozia purpurea*,
 Bazzania triangularis,
 Lophocolea bidentata,
 n.l. — *cuspidata*,
 Kantia calypogea,
 n.l. *Saccogyna viticulosa*,
 n.l. *Herberta adunca*,
 Martinellia gracilis,
 — *planifolia*,
 — *rosacea*,
 n.l. *Plagiochila spinulosa*,
 Mylia Taylori,
 Jungermania atrovirens,
 — *Mülleri* var. *ban-*
 tryensis,
 — *orcadensis*,
 — *socia*,
 — *ovata*,
 — *Donniana*,
 Nardia hyalina,
 — *obovata*,
 Marsupella sparcifolia,
 — *Fuckii*,
 Metzgeria conjugata,
 Riccardia latifrons,
 Sphagnum imbricatum,
 — *Russowii*,
 — *fuscum*,
 n.l. — *quinquefarium*,
 — *tenellum*,
 — *recurvum*,
 — *angustifolium*,
 n.l. *Fissidens cristatus*,
 Astrophyllum undulatum,
 n.l. *Breutelia chrysocoma*,
 Philonotis seriata,
 Bartramia pomiformis,
 — — var.
 crispa,
 Bryum alpinum,
- Bryum erythrocarpum*,
 n.l. — *Marratii*,
 Pohlia Ludwigii,
 — *polymorpha* (var. *af-*
 finis),
 — *acuminata*,
 — *elongata*,
 n.l. *Tortula muralis*,
 n.l. *Mollia tenuirostris*,
 n.l. — *crispata*,
 n.l. — *rutilans*,
 Barbula fallax,
 n.l. — *cylindrica*,
 Dicranum fuscescens,
 — *longifolium*,
 Campylopus atrovirens,
 — *Schwarzii*,
 n.l. — *fragilis*,
 n.l. *Dicranella heteromalla*,
 ? n.l. *Archidium alternifolium*,
 Oncophorus crispatus,
 Weissia americana,
 n.l. *Zygodon viridissimus* var.
 rupestris,
 n.l. *Glyphomitrium polyphyllum*,
 n.l. *Grimmia affinis*,
 n.l. — *trichophylla*,
 n.l. — *pulvinata*,
 — *gracilis*,
 Thuidium tamariscifolium,
 Amblystegium palustre var.
 subsphaericarpon,
 — *trifarium*,
 n.l. *Hypnum hians* var. *distans*,
 — *Swartzii*,
 — *rutabulum* var. *fla-*
 vescens,
 Isothecium viviparum,
 Hylocomium umbratum,
 n.l. — *brevirostre*,

? n.l. <i>Hyocomium flagellare</i> ,	<i>Plagiothecium undulatum</i> ,
n.l. <i>Stereodon resupinnatus</i> ,	— <i>denticulatum</i>
— <i>hamulosus</i> ,	var. <i>Donii</i> ,
<i>Isopterygium elegans</i> ,	<i>Pterigophyllum lucens</i> .

Of the 33 Hepaticae 6 are c., 14 w.c. and 13 Atl., of the 7 Sphagna 5 c. and 2 w.c., and of the 50 Musci frondosi 23 c., 16 w.c., 9 Atl. and 2 alp. arct. forms. The species marked n.l. probably attain their northern limits in the Færøes. The above list might certainly be reduced to about one half, if Iceland were more thoroughly explored, when probably the c. and alp. arct. forms would be found in that country especially abundant. Of southern forms, especially Mediterranean-Atlantic, that reach the coast of the Færøes, may be mentioned: *Funaria attenuata* (on Österö, near Göte), *Mollia flavovirens* (on Vaagö, near Bosdalafof), *Martinellia geniculata* (on Strömö, near Thorshavn), hitherto only found in Italy, on the south side of the Alps.

Common or frequent on the islands and characterizing the vegetation are: — On sea-cliffs: *Weissia maritima*, *Grimmia maritima*. On stones and rocks in the interior: *Radula commutata*, *Grimmia microcarpa*, *Grimmia fascicularis*. In rills or on their borders: *Nardia obovata*, *Jungermania cordifolia*, *Bryum ventricosum* var. *atlanticum*, *Anisothecium squarrosum*, *Amblystegium revolvens*. On moist, wet or boggy ground: *Frullania Tamarisci*, *Lejeunea patens*, *Pleurozia purpurea*, *Herberta adunca*, *Martinellia gracilis*, *Diplophyllum albicans*, *Sphagnum subnitens*, *Polytrichum subrotundum*, *Astrophyllum hornum*, *Breutelia chrysocoma*, *Funaria obtusa*, *Diphyscium sessile*, *Mollia litoralis*, *Campylopus atrovirens*, *Campylopus Schwarzii*, *Dichodontium pellucidum*, *Grimmia hypnoides*, *Amblystegium sarmentosum*, *Isolthecium tenuinerve*, *Hylocomium loreum*, *Plagiothecium undulatum*. On moist, gravelly ground in higher regions: *Anthelia julacea*, *Grimmia elliptica*, *Andrecea alpina*. On mountain-summits: *Grimmia hypnoides*, *Grimmia canescens* var. *ericoides*.

We may presume that the geographical situation and the topography of the various parts of the islands in some degree influences the vegetation; especially that Syderö, the most southern island, possesses a vegetation somewhat differing from that of the other islands. The following comparisons may help to solve this question.

THE SOUTHERN PART (S.).

Properly speaking only Syderö can be considered as belonging to this part since Lille Dimon is still unexplored. Syderö, ab. 153 □ kilom., is the most southern and most isolated of the islands. The mountains are low, not above 600 m., generally ab. 500 m. The island possesses 253 species and 29 varieties. Of these 281 forms: —

166 (ab. 59 ⁰ /o) are c.	76 (ab. 27 ⁰ /o) are suba.
63 (ab. 22,5 ⁰ /o) are w. c.	9 (ab. 3,2 ⁰ /o) are alp. arct.
37 (ab. 13,17 ⁰ /o) are Atl.	

Of the species 69 (ab. 28⁰/o) are Hepaticae, besides 9 varieties. Of these 78 forms: —

36 (ab. 46 ⁰ /o) are c.	18 (ab. 23 ⁰ /o) are suba.
23 (ab. 29 ⁰ /o) are w. c.	4 (ab. 5 ⁰ /o) are alp. arct.
12 (ab. 15 ⁰ /o) are Atl.	

Sphagna, 10 (3,95⁰/o) species and 3 varieties of these 13 forms 7 are c., 6 w. c. besides one suba.

Musci frondosi 174 (ab. 69⁰/o) species, whereof 114 Acrocarpi and 60 Pleurocarpi, besides 17 varieties. Of all these 191 forms: —

123 (ab. 64 ⁰ /o) are c.	57 (ab. 30 ⁰ /o) are suba.
34 (ab. 18 ⁰ /o) are w. c.	5 (ab. 2,62 ⁰ /o) are alp. arct.
25 (ab. 13 ⁰ /o) are Atl.	

The following 15 species and varieties have not been found on the other islands: — *Porella rivularis* var. *feroënsis*, *Kantia Calypogea*, *Plagiochila asplenioides* var. *heterophylla*, *Jungermania barbata*, *Blasia pusilla*, *Sphagnum papillosum* var. *sublaeve*, *Astrophyllum undulatum* var. *cuspidatum*, *Astrophyllum stellare*, *Philonotis capillaris*, *Pohlia gracilis*, *Pohlia nutans* var. *teres*, *Campylopus Schimperii* var. *flagellifera*, *Amblystegium fluitans* var. *pseudostamineum*, *Hypnum hians* (var. *distans*), *Entodon orthocarpus*.

THE CENTRAL PART (C.),

ab. 241 □ kilom., consists of Store Dimon, Sandö, Hestö, Nolsö, the southern part of Strömö to a line drawn between Syderdal and Sund, and the southern part of Österö to the valley of Toftevatn. The islands Skuö and Kolter, which also belong to part C., are not yet explored. This part resembles part S. in its proportionally low mountains and its extensive tracts of low and generally level ground. The southern part of Österö, the environs of Thorshavn on Strömö

and of Sand on Sandö have these characteristics especially marked. On Sandö, between Sandsbugt and the lake Sandsvatn, the soil is very sandy, with low dunes near the sea. Part C. possesses 250 species and 25 varieties, of these 275 forms: —

162 (ab. 59%) are c.	68 (ab. 25%) are suba.
66 (ab. 24%) are w. c.	10 (3,64%) are alp. arct.
36 (ab. 13%) are Atl.	

Of the species 71 (ab. 28%) are Hepaticae, besides 10 varieties. Of these 81 forms: —

38 (ab. 47%) are c.	21 (ab. 26%) are suba.
25 (ab. 31%) are w. c.	5 (6,17%) are alp. arct.
13 (ab. 15%) are Atl.	

Sphagna 11, (4,4%) species and 2 varieties, whereof 8 are c., 5 w. c. besides 1 suba.

Musci frondosi, 168 (ab. 67%) species, whereof 121 *Acrocarpi* and 47 *Pleurocarpi*, besides 13 varieties. Of all these 181 forms: —

116 (ab. 65%) are c.	46 (ab. 25%) are suba.
36 (ab. 20%) are w. c.	5 (2,71%) are alp. arct.
23 (ab. 13%) are Atl.	

The following 30 species and varieties have only been found in C.

On Store Dimon: —

Pottia crinita (n. l.), *Grimmia trichophylla*.

On Sandö: —

Marsupella sparcifolia, *Sphagnum amblyphyllum*, *Astrophyllum cuspidatum* var. *integrifolium*, *A. silvaticum*, *Bryum alpinum* var. *viride*, *B. erythrocarpum*, *B. Marratii* (n. l.), *B. pendulum*, *B. lacustre*, *Tortula ruralis* (var. *arenicola*), *Mollia tortilis* (n. l.), *Barbula fallax*, *Amblystegium Kneiffii*, *Hypnum Mildeanum*, *H. albicans*.

On Hestö: —

Plagiochila asplenioides var. *humilis*.

On South Strömö: —

Lepidozia setacea, *Odontoschisma Sphagni*, *Martinellia geniculata* (n. l.), *Plagiochila asplenioides* var. *humilis*, *Mylia anomala*, *Jungermania inflata*, *Bryum fallax* (n. l.), *B. lapponicum*, *Tetraplodon bryoides*, *Barbula brevifolia*, *Oncophorus polycarpus*, *Grimmia ovalis*, *G. trichophylla*, *Hypnum albicans*.

On Nolsö: —

Metzgeria furcata var. *aeruginosa*, *Astrophyllum cuspidatum* var. *integrifolium*.

On South Österö: —

Dicranum longifolium, *Grimmia trichophylla* (n.l.).

The n.l. for *Glyphomitrium Daviesii* goes beyond South Strömö.

THE WESTERN PART (W.),

ab. 188 □ kilom., which contains the islands Vaagö and Myggenæs, is mountainous and is rather more than 700 m. in extent. The environs of the lake Sörvaagsvatn on Vaagö are comparatively low (30—100 m.) and this low elevation is continued northwards as a broad valley, dividing the island into an eastern and western highland. In the W. have been found 206 species and 13 varieties. Of these 219 forms: —

126 (ab. 57,5%) are c.	65 (ab. 30%) are suba.
54 (ab. 25%) are w. c.	9 (4,11%) are alp. arct.
30 (ab. 14%) are Atl.	

Of the species 53 (ab. 26%) are Hepaticae, besides 4 varieties. Of these 57 forms: —

24 (ab. 42%) are c.	20 (ab. 35%) are suba.
21 (ab. 37%) are w. c.	3 (5,26%) are alp. arct.
11 (ab. 19%) are Atl.	

9 (4,37%) *Sphagna* and 1 variety, whereof 6 are c., 4 w. c. besides 1 suba.

Musci frondosi, 144 (ab. 70%) species, whereof 100 *Acrocarpi* and 44 *Pleurocarpi*, besides 8 varieties. Of all the 152 forms: —

96 (ab. 63%) are c.	44 (ab. 29%) are suba.
29 (ab. 19%) are w. c.	6 (3,95%) are alp. arct.
19 (ab. 12,5%) are Atl.	

The following 8 species and varieties have only been found in the W.

On Myggenæs: —

Ditrichum homomallum var. *subalpinum*.

On Vaagö: —

Lejeunea cavifolia var. *planiuscula*, *Jungermania pumila*, *J. Wenzelii*, *Marsupella Funckii*, *Mollia flavovirens* (n.l.), *M. brachydonia* (n.l.),

Dicranum Anderssonii. The *Dicranum Anderssonii* has only been known in Lapland, where it was discovered in 1857 by Dr. Wichura, who gathered it on the summit (1250 m.) of the mountain Njunnats near Qvickjock in Lule-Lapmark. Besides the two above-named species the n. l. for *Barbula brevifolia* var. *acutifolia* is also in the W.

THE NORTHERN PART (N.),

ab. 574 □ kilom., is the largest and contains North Strömö, the line drawn between Syderdal and Sund forming its southern boundary, and Österö north of the valley of Toftvatn. It is very mountainous and rises to an average altitude of more than 500 m., sometimes 700—900 m. Strömö is divided by deep valleys into 3 higher parts, the southern part, south of the valley between Kollefjord and Lejnum, the middle part, between the above mentioned valley and that between Kvalvig and Saxen, the northern part, north of the latter valley. Österö is sharply and deeply divided into a western and eastern part by the valley between Skaalefjord and Fundingfjord. 272 species and 29 varieties have been found in the N. Of these 301 forms: —

176 (ab. 58,5%) are c.	101 (ab. 37%) are suba.
74 (ab. 24,5%) are w. c.	19 (ab. 6%) are alp. arct.
38 (ab. 13%) are Atl.	

Of the species 77 (ab. 28%) are Hepaticae, besides 11 varieties. Of these 88 forms: —

38 (ab. 43%) are c.	31 (ab. 35%) are suba.
29 (ab. 33%) are w. c.	8 (ab. 9%) are alp. arct.
16 (ab. 18%) are Atl.	

16 (5,9%) are Sphagna with 2 varieties. Of these 18 forms 11 are c. and 7 w. c. Of the 11 c. two are also suba.

Musci frondosi, 179 (ab. 66%) species, whereof 119 Acrocarpi and 60 Pleurocarpi, besides 16 varieties. Of all the 195 forms: —

127 (ab. 65%) are c.	68 (ab. 35%) are suba.
38 (ab. 19,5%) are w. c.	11 (5,64%) are alp. arct.
22 (ab. 11%) are Atl.	

The following 37 species and varieties have not been found in the other parts: —

On Strömö: —

Lejeunea calcarea, *L. microscopica*, *Frullania Jackii*, *Hygrobiella laxifolia*, *Martinellia planifolia*, *Jungermania Donniana*, *Pallavicinia Blyttii*, *Sphagnum fuscum*, *Philonotis fontana* var. *compacta*, *P. seriala*, *Bryum cirratum*, *Splachnum pedunculatum*, *Dicranum albicans*, *Anisothecium crispum* (var. *atlanticum*), *Grimmia canescens* var. *epilosa*, *Hypnum piliferum*.

On Österö: —

Chomocarpon quadratus, *Lejeunea microscopica* (n.l.), *Porella Thuja* (n.l.), *Hygrobiella laxifolia*, *Martinellia planifolia*, *Jungermania riparia* var. *rivularis*, *J. obtusa*, *J. atlantica*, *J. quinquedentata* var. *turgida*, *Pallavicinia Blyttii*, *Sphagnum imbricatum*, *S. centrale*, *S. Russowii*, *S. fuscum*, *Polytrichum sexangulare*, *P. alpinum* var. *septentrionale*, *Astrophyllum medium*, *Philonotis fontana* var. *compacta*, *Bryum cirratum*, *Pohlia Ludwigii*, *Funaria attenuata* (n.l.), *Splachnum pedunculatum*, *Dicranum albicans*, *D. fuscescens*, *Grimmia canescens* var. *epilosa*, *Amblystegium dilatatum*, *A. stramineum*, *A. trifarium*, *A. cordifolium*, *Lesquereuxia patens*, *Hylocomium pyrenaicum*.

The n.l. for *Jamesoniella Carringtonii*, *Philonotis Ryani* occurs on Strömö.

The n.l. for the following species and for the 3 above-named, occurs on Österö: — *Diphyscium sessile* var. *acutifolia*, *Mollia tenuirostris*, *Dichodontium flavescens*, *Zygodon viridissimus* var. *rupestris*.

The northern part is remarkable for its great number of species, whereof 19 are alp. arct. The special conditions required for the existence of an abundance of species may exist on these 2 islands, where the lower parts are much more sheltered from the often violent westerly winds. The larger area also gives greater variety of locality than do the smaller islands.

THE EASTERN PART (E.),

ab. 224 □ kilom., contains the 6 islands which belong to the Nordreöer, they are, Kalsö, Kunö, Bordö, Viderö, Svinö and Fuglö. These islands consist of mountains, rising partly from the sea to a height of ab. 800 m. Compared with the area the number of species is small, owing partly to the small area of the single islands, partly to the

incomplete exploration of them. 193 species and 14 varieties have been found in the E. Of these 207 forms: —

126 (ab. 60,5%) are c.	62 (ab. 30%) are suba.
49 (ab. 24%) are w. c.	8 (3,63%) are alp. arct.
23 (ab. 11%) are Atl.	

Of the species 50 (ab. 25%) are Hepaticae, besides 5 varieties. Of these 55 forms: —

27 (ab. 49%) are c.	18 (ab. 33%) are suba.
19 (ab. 34,5%) are w. c.	3 (5,45%) are alp. arct.
7 (ab. 13%) are Atl.	

10 (5,18%) *Sphagna* with 1 variety, whereof 5 are c., 6 w. c. and also 1 suba.

Musci frondosi, 133 (ab. 69%) species, whereof 84 *Acrocarpi* and 49 *Pleurocarpi*, besides 8 varieties. Of all these 141 forms: —

94 (ab. 66,5%) are c.	43 (ab. 30,5%) are suba.
25 (ab. 18%) are w. c.	5 (3,56%) are alp. arct.
16 (ab. 11%) are Atl.	

Barbula reflexa and *Plagiothecium denticulatum* (var. *Donii*) have not been found in the other parts. The northern limit for *Barbula reflexa* as well as for *Metzgeria hamata* occurs in this part (Bordö).

This comparison shows that Syderö in relation to its small area — it forms the smallest part — possesses a large number of species, the next largest in fact. This marked superiority no doubt is due to the southern situation of that island. The similarity of the moss-flora to that of the central part, however, is so great that these 2 parts may very well be united to a S. C. part, in contrast to the somewhat greater northern part: the W. N. E. parts. The following mosses, which more or less belong to southern regions, have only been found in the S. C. part, below 200 m.: — *Lepidozia setacea*, *Odontoschisma Sphagni*, *Martinellia geniculata*, *Mylia anomala*, *Jungermania inflata*, *J. socia*, *J. barbata*, *J. ovata*, *Blasia pusilla*, *Astrophyllum stellare*, *A. silvaticum*, *Philonotis capillaris*, *Bryum erythrocarpum*, *B. fallax*, *B. caespiticium*, *B. Marratii*, *Pottia crinita*, *Barbula fallax*, *Mollia tortilis*, *Dicranum longifolium*, *Archidium alternifolium*, *Oncophorus polycarpus*, *Glyphomitrrium polyphyllum*, *G. Daviesii*, *Grimmia affinis*, *G. trichophylla*, *Hypnum hians* var. *distan*s, *H. albicans*, *Isothecium viviparum*, *Isopterygium elegans*, *Entodon orthocarpus*, *Hedwigia albicans*.

Two species, *Marsupella sparcifolia* and *Pohlia gracilis*, belong to a rather raw and cold climate, but they are only found in more elevated parts of S. C., respectively at ab. 500 and 300 m. With regard to Syderø by itself, it may be specially mentioned that *Jungermania Floerkii* has not hitherto been found on this island, whilst it is frequent on most of the other islands, and that *Jungermania lycopodioides* and *Jamesoniella Carringtonii* grow even on the summit of Kvannefjæld near Vaag, ab. 550 m., whereas they prefer more sheltered places in other parts of the Færøes.

The 3 northern parts, W. N. E., taken collectively possess the following characteristic elements, which clearly indicate a rather raw and cold climate, viz.: — *Chomocarpon quadratus*, *Hygrobiella laxifolia*, *Martinellia uliginosa*, *Jungermania Wenzelii*, *Pallavicinia Blyttii*, *Sphagnum imbricatum*, *S. centrale*, *S. Russowii*, *S. Warnstorffii*, *Polytrichum sexangulare*, *P. alpinum* var. *septentrionale*, *Astrophyllum medium*, *Philonotis seriata*, *Bryum cirratum*, *Pohlia Ludwigii*, *P. elongata*, *Splachnum pedunculatum*, *Dicranum albicans*, *D. falcatum*, *D. Anderssonii*, *Oncophorus Wahlenbergii*, *Amblystegium dilatatum*, *Lesquereuxia palens*, *Hylocomium umbratum*, *Plagiothecium denticulatum* var. *Donii*, *Fontinalis gracilis*.

The following are peculiar to mild, southern regions, viz.: — *Lejeunea microscopica*, *Porella Thuja*, *Martinellia planifolia*, *Marsupella Funckii*, *Metzgeria hamata*, *Funaria attenuata*, *Mollia flavovirens*, *M. brachydontia*, *Barbula reflexa*.

These species peculiar to a milder climate have been only found here and there in sheltered places, e.g. near Ejde on Österø, and in ravines near Göte and Vestmanhavn.

A comparison between the various parts gives the following general result. The N. possesses the greatest number of alp. arct., viz. 19 (6%) and of suba., viz. 101 (37%) forms, whilst the other parts only possess 8—10 (3.71%) alp. arct. and 61—76 (28%) suba. forms. With regard to the horizontal distribution the difference is but unimportant. The c. and the w.c. species are distributed almost in the same proportion in all 5 parts, and the Atl. species are represented by 13.3% in the S. C. W. N. and 11% in the E. The 3 orders, Hepaticae, Sphagna and Musci frondosi, considering their distribution on the islands, give the result that the S. C. N. possesses the greatest percentage (ab. 28%), then the W. (ab. 26%) and the E. (ab. 25%) of Hepaticae, and that the N. possesses the greatest number, viz. 16, of Sphagna, whilst the other

parts have but 9—11 species and that Musci frondosi are represented by 66—70% in all the different parts. Finally the E.-part possesses the largest percentage of Pleurocarpi and the C.-part of Acrocarpi.

In order to compare the moss-flora of the nearest countries or parts of them with the moss-flora of the Færøes, the following table may be sufficient: —

	Norway, the west coast between 58°20 and 60°12 N. lat., ab. 5000 □ kilom. 453 species	Scotland, 78895 □ kilom. ab. 600 species and 50 varieties	Færøes, ab. 3125 □ kilom. 341 species and 50 varieties	Iceland, 104785 □ kilom. 367 species and 18 varieties
Hepaticae	35 %	20 %	28 %	23 %
Sphagna	5 -	3,33 -	5 -	5 -
Musci frondosi acrocarpi . .	42 -	55 -	46 -	45 -
Musci frondosi pleurocarpi .	18 -	21,5 -	21 -	27 -
Continental mosses	57 -	53,5 -	58 -	68 -
Western-continental mosses .	33 -	25 -	22 -	15 -
Atlantic mosses	10 -	14 -	13 -	4,16 -
Circumpolar mosses	40 -	41 -	48 -	60 -
Subalpine-subarctic mosses . .	28 -	30 -	30 -	28 -
Alpine-arctic mosses	7,28 -	6,6 -	6 -	9 -

Of the Scottish, West-Norwegian and Icelandic species which appear to be wanting in the Færøes, the following may specially be noticed: —

Found in Britain, Norway and Iceland: *Reboulia hemisphaerica*, *Cephalozia albecens*, *Blepharostoma setiformis*, *Jungermania minuta*, *Nardia compressa*, *Meesea trichoides*, *Bryum Duvalii*, *Selania caesia*.

Found in Britain and Norway: *Lejeunea ulicina*, *L. ovata*, *Bryum turbinatum* var. *latifolium*, *B. Stirtoni*, *Amblyodon dealbatus*, *Oedipodium Griffithianum*, *Dicranum asperulum*, *D. uncinatum*, *Campylopus brevipilus*.

Found in Britain and Iceland: *Leptodontium flexifolium*.

Found in Norway: *Lepidozia Wulfsbergii*.

EXPLANATION OF PLATES.

PLATE II.

Radula commulata Jack.
Færøese ♂ plant ($^{16}/_1$).

PLATE III.

Philonotis Ryani Philib.
(Færøese specimen).

- Fig. 1. Fruiting fem. plant (nat. size).
— 2. Male plant (nat. size).
— 3. Fruit ($^4/_1$).
— 4. Upper part of the male plant, with inflor. ($^8/_1$).
— 5—8. Perigonal bracts ($^{16}/_1$).
— 9—10. Leaves ($^{32}/_1$). 9 x, texture from the base; 9 y, texture a little above the middle ($^{180}/_1$).
— 11. Perichaetial leaf ($^{16}/_1$).
— 12. Tooth of the exostome ($^{90}/_1$).
— 13. Part of the endostome ($^{90}/_1$).

PLATE IV.

Pohlia færøensis sp. n.

- Fig. 1. Male plant (nat. size).
— 2. Top of the male plant, with inflor. ($^8/_1$).
— 3—4. Perigonal bracts, one of them with two antheridia and some paraphyses ($^8/_1$).
— 5—6. Leaves ($^8/_1$).
— 7. Texture from the apex of leaf, above the nerve ($^{90}/_1$).
— 8. Texture from the middle of leaf ($^{90}/_1$).
— 9. Texture from the margin of leaf, above the middle ($^{90}/_1$).
— 10. Texture from the base of leaf ($^{90}/_1$).
— 11. Transverse section of the stem, z, central strand; x, the decurrent nerve, with the conducting group y ($^{24}/_1$).
— 12. Part of transverse section of the stem and the decurrent nerve ($^{180}/_1$); y, conducting group; z, central strand.
— 13. Transverse section of the leaf-nerve ($^{180}/_1$).

PLATE V and VI.

Dicranum Anderssonii (Wich.) Schimp. — V (original specimen).

Fig. 1. Capsule among perichaetial-leaves ($^7/_1$).

- 2. Capsule with seta ($^7/_1$).
— 3. Part of the capsule with rest of exostome-tooth, somewhat sketchy ($^{160}/_1$); x, part of the tooth, showing the striae on the outside ($^{170}/_1$).
— 4. Spores ($^{110}/_1$).
— 5. Texture from the middle of outside of the capsule ($^{160}/_1$).
— 6. Vaginula with a perichaetial-leaf ($^{15}/_1$).
— 7—8. Perichaetial-leaves ($^{15}/_1$).
— 9—10. Leaves ($^{15}/_1$). y, basal cells ($^{70}/_1$); z, cells from the broad upper part ($^{220}/_1$).
— 11—16. Leaves ($^{21}/_1$). 12 z, angular cells ($^{160}/_1$); 13 y, basal cells ($^{70}/_1$); 13 x, cells from the middle of the broad part ($^{220}/_1$).

VI (Færøese specimen).

Fig. 1. Fertile plant ($^{15}/_1$).

- 2. Calyptra ($^{15}/_1$).
— 3. Fruit with vaginula and male flower ($^{15}/_1$).
— 4—6. Lids ($^{15}/_1$).
— 7. Part of peristome and annulus ($^{132}/_1$).
— 8. Part of a peristome-tooth (outside), showing the striae ($^{170}/_1$).
— 9. Cells of annulus ($^{220}/_1$).
— 10. Spores ($^{220}/_1$).
— 11. Texture from the middle of outside of the capsule ($^{160}/_1$).
— 12. Perigonal-bract ($^{15}/_1$).
— 13 a. 14. Perichaetial-leaves ($^{21}/_1$).
— 15—18. Leaves ($^{21}/_1$). 18 x, angular- and basal-cells ($^{70}/_1$); 18 y, cells from the broad upper part ($^{220}/_1$); 15 z, angular-cells ($^{160}/_1$); 15 ö, cells from the upper part ($^{220}/_1$).

FRESHWATER ALGÆ¹

BY

F. BORGESEN.

(With plates VII—X).

IN the years 1895, 96 and 98 I stayed a couple of months at a time in the Færøes, for the purpose of studying the algæ-vegetation along the coasts, and have also on my frequent trips round the islands gathered a considerable material of Freshwater Algæ. Professor Warming, Mr. Jensen, Mr. Ostenfeld, Mr. Jónsson, and others have during their stay on the islands made considerable collections from numerous localities and at different seasons. In this way a comparatively large material has been at my disposal and the result has therefore been that the number of hitherto known freshwater algæ from the islands has been considerably increased which was indeed to be expected as the islands have not been examined by any algologist since Lyngbye's days.

Jørgen Landt² is the first who has, as far as I know, given a fairly intelligible report of the freshwater algæ from the Færøes; he mentions a few freshwater species such as *Tremella Nostoc* which judging from his description seems to be *Nostoc commune*, *Byssus botryoides* which may be *Pleurococcus vulgaris* and *Conserva rivularis* which perhaps is *Ulothrix zonata* and a few other species with regard to which one cannot decide, what is actually meant.

In the year 1817 Hans Christian Lyngbye, traversed the Færøes and in his classic work: »Tentamen Hydrophytologiæ Danicæ« he mentions more than 30 species of freshwater algæ from the Færøes. By means of original specimens in Lyngbye's

¹ When this paper was ready for the press a résumé of it was read before the »Naturhistoriske Forening«, Copenhagen, in 1899. (Vidensk. Medd. f. d. nat. Forening, Kjøbenhavn 1899, p. 317).

² Jørgen Landt: »Forsøg til en Beskrivelse over Færoerne«, Kjøbenhavn 1800.

Herbarium, in the Botanical Museum, Copenhagen, it has been possible to revise Lyngbye's old determinations so that we now know, excepting some species of which the material was altogether wanting or too badly preserved to be fit for determination, which species are identical with Lyngbye's determinations. With regard to some of the specimens, Bornet and Flahault, Gomont, Gay and others had already made similar determinations, partly on the faith of specimens from Thuret's Herbarium, which contains a few of Lyngbye's original specimens and partly by utilising the museum in Copenhagen¹.

The following larger contribution is due to Dr. E. Rostrup who in 1867 traversed the Færøes in company with Mr. Feilberg. In »Færøernes Flora« Rostrup mentions nearly seventy species of freshwater algæ, and as the determinations of the freshwater algæ-material collected by Rostrup and Feilberg are due to Dr. Nordstedt, Lund, the great advantage is that they may be regarded as up to date even if, after so long a period, a different opinion has arisen on some points.

Finally in »Botaniska Notiser«, 1897 (that is to say after I began this work), Wille has given in an interesting paper — »Om Færøernes Ferskvandsalger og om Ferskvandsalgernes Spredningsmaader« — a smaller contribution to the knowledge of the freshwater algæ of the Færøes. Wille had from time to time received from his former pupil, Mr. Johannes Patursson (»Kongsbonde«, Kirkebö), specimens of freshwater algæ which were rather destitute of species. Wille found altogether only 42 species of which 16 were already known from the Færøes. Wille's list comprises about 100 species, all previously known species being included; besides, Wille has tried to criticise Lyngbye's determinations in »Hydrophytologia«, as far as it could be done without having original specimens at hand to which to refer.

Though Wille emphasizes that no collection of algæ has been made from the Færøes by any algologist after Lyngbye and that further investigations may possibly add new species to the list of the Færøese freshwater algæ, still he arrives at the conclusion that

¹ In Hornemann's »Forsøg til en dansk oconomisk Plantekære«, and in Trevelyan's »On the Vegetation and Temperature of the Faroe Islands«, freshwater algæ from the Færøes are mentioned, but they appear to be only an extract from Lyngbye's Hydrophyt. Trevelyan with regard to the algæ merely refers to Lyngbye, he, however, specially mentions *Tremella Nostoc*.

the Færøese freshwater algæ-flora seems to be very poor, and he adds, »how relatively poor the freshwater algæ-flora of the Færøes really is in species is still more clearly proved by comparison with those of other places, e. g. of Nova Zembla, whence no less than 180 species have been reported, though it is much farther north«. With regard to this I may remark that the total number including the new species named in this paper is 323, i. e. nearly twice the number of species as reported from Nova Zembla. If we further compare the freshwater algæ of the Færøes known at the present day with those of West Ireland with regard to which West in his paper: »On the Freshwater Algæ of West Ireland« — excepting the Diatoms — reports 487 species, and when we make allowance for the isolated situation and the small area covered by the Færøes it appears to me that the freshwater algæ-flora in the latter place must be called proportionally rich in species, more so, as many more new species of the flora are sure to be found.

Boldt's primary work on the spreading of the Desmids in the north¹ shows that this group has several floristic districts, and if we now examine with which of these the freshwater algæ-flora of the Færøes is specially related, we arrive very naturally at the conclusion that it is with that of West Europe and especially with that of Ireland and Scotland. Wille says (l. c. p. 4) that: »the algæ-flora of the Færøes must more particularly be characterized as a poorer part of the English algæ-flora,« and he goes on to say: »this not only applies to the species themselves, but also to the forms under which they appear and which bear a striking resemblance to the figures we know from English works, e. g. Ralfs's figures of Desmids.« Here I may say that this likeness, it seems to me, appears more clearly now in the discovery of a series of forms, which Wille had not found, e. g. in the large species of *Enastrum*, the *Micrasterias*-species, *Xanthidium armatum*, several species of *Cosmarium* and *Staurastrum* and many others which are characteristic not only of the algæ of England, but also of West Europe. Besides these, several species and forms have been found which further prove the near relationship between the freshwater algæ-flora of the Færøes and that of Ireland and Scotland, they having been found and described in the latter countries, e. g. *Staurastrum jaculiferum* West,

¹ Robert Boldt: »Grunddragen af Desmidiernas utbredning i Norden«. (Bihang till Svenska Vet. Akad. Handlingar. 13. Afd. III No. 6. Stockholm 1887).

St. rostellum Roy and Biss., *St. horametrum* Roy and Biss., *Xanthidium quadricornutum* Roy and Biss., etc.

While thus, upon the whole the freshwater algæ of the Færøes must be considered as West European especially English, the Nordreøer -- where also the Arctic-Alpine phanerogams are most richly represented -- contain an algæ-flora of a more Arctic stamp. Thus the following Desmids were found in a collection of algæ from Bordö gathered by Ostenfeld at a height of 450 metres: — *Cosmarium anceps* Lund., *C. coelatum* Ralfs, *C. cucumis* Ralfs forma *major* Nordst., *C. Holmiense* Lund. β *integrum* Lund. forma (Nordst. Desm. Spetsb. p. 28, tab. 6, fig. 5), *C. homalodermum* Nordst., *C. latum* Breb., *C. microsphinctum* Nordst. β *crispulum* Nordst., *C. speciosum* Lund. var. *biforme* Nordst., *C. subspeciosum* Nordst., *Staurastrum acarides* Nordst. (abundantly!), *St. Meriani* Reinsch, *Penium crassiusculum* De Bar. As will be seen from this list, all the Desmids — barring a few exceptions — are such as have been described from and are common in the Arctic regions, and the absence of some species, common to low-lying regions, further proves the Arctic character of the above gathering, thus, the large species of *Euastrum* are wanting, and regarding them Boldt writes¹ that they are »conspicuous by their absence in the northernmost countries«.

It is also here in the northernmost part of the Færøes that *Hydrurus penicillatus* occurs, as it has been found by Lyngbye on Slattaratinde, the highest mountain in the Færøes. True, this alga is common in Central Europe early in spring when the snow melts, but it is also common in the Arctic regions.

If we now ask how the Færøes after the glacial period, at which time we may presume that they were completely covered with ice and snow, have got this comparatively rich freshwater algæ-flora, I can only confirm the statement of Wille in his above-mentioned paper in which he quite abandons the theory of a former belt of land as a means of immigration. Of the four different means of distribution named by Wille, it is mostly — as also Wille points out — the wind and the migratory birds, and especially the latter, which are of such great importance to the Færøes. In addition to his arguments in favour of this theory I think further proofs are found by the fact of my having met with several Irish and Scottish algæ in the Færøes and partly and not least from the Arctic element of

¹ Boldt l. c. p. 84 »som lyse genom sin frånvara i de nordligaste länderna .

the Nordreöer. For if no Arctic algæ occurred in the Færøes we might wonder why birds only in spring would bring algæ along with them from the south and west and not also in autumn from the north. I quite agree with Wille in thinking that the flights of birds which yearly take up their abode in the Færøes or pass the islands on their way northwards could very easily have conveyed to the islands the freshwater algæ-flora — and perhaps the whole of the flora — which is found there, and in that case they will doubtless keep on conveying new forms to the islands.

But as maintained by Ostenfeld (see above p. 113) it is possible that there has existed a post-glacial land-bridge, and the flora has consequently migrated across it. Adolf Jensen's¹ interesting paper seems to favour this theory, but it is as yet far from proved. Therefore the conclusion that the flora of the Færøes have migrated by means or ways which are still in existence commends itself to me as far more satisfactory. I shall here relative to this shortly allude to Warming's exhaustive and interesting treatise on this subject in his well-known work: »Om Grønlands Vegetation²«. In this work he quite abandons the theory of a post-glacial land-bridge as being necessary to account for the European character of the flora of South and South-East Greenland. As means of immigration, he mentions the three different factors already pointed out: birds, wind and ocean currents, and also in connection with the regions of the High-North: ice and floating timber. In speaking of these factors he gives instances of the manner in which the immigration of the flora has been affected by them. Among other cases in point Warming also mentions Jan Mayen and writes: »surrounded by vast ocean depths (1000—2000 fathoms) and being of vulcanic origin this island must have emerged from the ocean (its rocks are more recent than those of the Færøes and Iceland) without ever having been connected with any land; it lies far from Greenland, about 60 geographical miles, from Iceland about 75, from Spitzbergen and Norway about 120; yet in spite of the extremely unfavourable conditions for all vegetation existing on it, it has obtained a flora consisting of at least 20 flowering plants³«.

¹ Adolf Jensen: »Om Levninger af Grundtvandsdyr paa store Havdyb mellem Jan Mayen og Island«. (Vidensk. Medd. fra den naturh. Foren. i Kbhvn. 1900).

² E. Warming: »Om Grønlands Vegetation«. (Medd. om Grønland, XII, 1888).

³ Ostenfeld-Hansen in his »Contribution à la flore de l'île Jan Mayen« mentions altogether 178 species of plants from this island, of which, however, 21 are marine algæ, and on the Amdrup Expedition of 1900, N. Hartz

True it must be admitted that the flora of Jan Mayen is far from rich, but we must bear in mind that, in the first place, the climate here is very unfavourable, secondly, that the distance between this lonely island and the nearest adjacent land is far greater than is the case with the Færøes, and also that doubtless many more migratory birds pass over the Færøes than over Jan Mayen, the latter does not always lie in the line of the migrating birds, as this varies according to the position of the ice-limit¹. Therefore I conclude that if the flora of Jan Mayen has been conveyed to the island across the sea either by the agency of wind or birds then the flora of the Færøes — though far richer — may also have been carried thither across the sea. Lastly I shall call attention to the following remark by Warming (l. c. p. 213): »Thus I consider it to be far from impossible for plants to migrate from Iceland to Greenland by means of ice, wind, ocean currents and birds (remember Jan Mayen!) and if it be argued that this occurs so very, very rarely in nature, I shall content myself with saying: we have time enough and to spare«.

These lines must suffice with regard to this matter in general; with regard to the immigration of the freshwater algæ in particular, I cannot help being of opinion that they may easily have been carried thither especially by the agency of the wind and birds. More so, as the latter are able to cover the distance, viz. between the British Isles and the Færøes in a couple of hours and most of the resting-cells of the freshwater algæ are able to survive such a short period of desiccation. As to its having been maintained (cfr. Ostenfeld l. c. p. 117) that migratory birds not only journey on an empty stomach, but their beaks, feet and feathers are also almost always clean when they journey, I beg to remark that a thorough microscopical examination of the plumage of a larger number of birds has hardly ever been accomplished and this is necessary in order to be able to detect the spores and resting-cells of the algæ.

Here as elsewhere the freshwater algæ seldom play any prominent part with regard to forming the character of the landscape; and more conspicuous formations are not generally met with. There

and Kruuse have found besides cryptogams — not yet determined — 11 new species of phanerogams, so that according to Kruuse the pteridophyta and phanerogams taken collectively now amount to 41 species.

¹ Cfr. Palmén: »Ueber die Zugstrassen der Vögel«. Leipzig 1876.

are, however, some algæ which either by their size or by their abundance attract attention.

At the bottom of smaller lakes and along the margins of larger ones a Characé-formation is often met with, which is rich in individuals, but not in species, in fact only two were found, viz. *Chara fragilis* and *Nitella opaca*; on the latter was found *Coleochaete Nitellarum* Jost, which is a characteristic epiphyte on *Nitella*.

Along the margins of the lakes and in the watercourses can be seen a wavy fresh green vegetation consisting of different filamentous algæ (*Ulothrix*, *Conferva*, *Microspora*, *Conjugatæ*, etc.) and sometimes also *Draparnaldia glomerata*. In the Sub-Alpine watercourses on Gliversrejn near Thorshavn an *Enteromorpha*-vegetation was already found by Lyngbye, and it was not only re-found here, but again on Fuglø at an altitude of 200 metres.

Also the *Cladophora* species can here and there form societies. Thus Ostenfeld found in the lake near Kvalbø Ejde a species of *Cladophora*, which I think may be referred to *Cl. glomerata* f. *macrogonia* Lyngb.; it grew abundantly at the bottom and close to the margin of the lake.

Large areas of moist peaty soil are frequently covered with a thin carpet of different kinds of algæ often tinged red-violet by Phycoporphyrin. *Conjugatæ* were most frequently met with in such localities; a sterile *Zygnemacé* — probably a form of *Zygogonium ericetorum* — may be named as especially characteristic; this was the most numerous and in this was also mixed *Mougeotia*, *Cylindrocystis*, a few blue-green algæ, e. g. *Oscillatoria limosa*, *Chroococcaceæ* and others.

In peat-holes, in bog pools and in shallow lakes here as elsewhere a luxuriant growth of algæ is very naturally found and in sheltered localities amongst *Sphagnum* and *Myriophyllum* a vegetation of algæ rich in species may be met with in which numerous species of Desmids play a prominent part. On the other hand many of the Alpine lakes containing water clear as crystal are apparently void of algæ-vegetation; but most of them seem to contain Plankton though not in great quantities, and a few species, e. g. *Staurostrum jaculiferum*, *Xanthidium quadricornutum* and some blue-green algæ have been only found in Plankton.

Everywhere in the Færøes where the water ripples down the rocks »sorte striber« (black stripes) are prominent (see fig. 14 in the »Introduction«), they are not only composed of several other plants,

but no doubt also of different species of blue-green algæ, I cannot say for certain which species, as I have not had any material for examination.

Lastly, I shall only mention the rich vegetation of *Prasiola crispa* (and »*Schizogonium murale*«) together with species of *Mesotenum*, etc. commonly found on moist grass roofs. Further a pale-green coat of *Pleurococcus vulgaris* often growing to the thickness of a millemetre which covers all unpainted wooden surfaces, especially the »Kelds« in the villages.

I render sincere thanks to all those who have assisted me with this work, especially to Miss Emma Hallas, who has very kindly determined the *Oedogoniaceæ* found in the Færøes, to Dr. Otto Nordstedt, who has not only determined the *Characeæ*, but also assisted me in other ways, and to Mr. Lemmermann, Bremen, who kindly determined some Plankton-algæ.

List of abbreviations.

Hydrophyt. = Hans Christian Lyngbye: Tentamen Hydrophytologiæ Danicæ. Hafniæ 1819.

Fær. Fl. = E. Rostrup: Færøernes Flora. (Botanisk Tidsskrift, vol. IV. 1870—1).

Wille (l.c.) = N. Wille: Om Færøernes Ferskvandsalger og om Ferskvandsalgerne Spredningsmaader. (Botaniska Notiser. 1897.).

Vid. = Viderö. Öst. = Österö.

Str. = Strömö. Syd. = Syderö.

I. Cyanophyceæ.

Order I. CHROOCOCCACEÆ.

1. *Chroococcus macrococcus* Rabenh.

Rostrup (Fær. Fl. p. 90) reports having found this species: »On rocks amongst Ephebe and on damp peaty soil near Sandegærde«. I found it to be part of some green gelatinous clumps which Mr. Helgi Jónsson had collected from the bottom of a small pond near Thorshavn (Str.).

2. *C. rufescens* (Bréb.) Nägl.

Found by Rostrup (Fær. Fl. p. 90): »Amongst Ephebe«.

3. *C. turgidus* Nägl.

Rostrup (Fær. Fl. p. 90) reports having found it: »On moss, Strömö«. I found it in collections from Thorshavn, Gliversrejn and Højvig on Str.; and from bare stony ground (Fjeldmark) on Bordö (450 m.).

4. *C. limneticus* Lemm.¹

Found in Plankton from Sörvaagsvatn (Vaagö); and Grothusvatn (Sandö).

5. *Gleocapsa Magma* Kütz.

This species has been already found by Lyngbye, who in Hydrophyt. p. 206 calls it *Pamella alpicola*. With regard to its distribution Lyngbye writes: »Habitat supra Muscos et Lichenes ad saxa alpina in summitate rupium altissimarum Færoensium, Skjelling, Snejsen et Ejlsfjeld prope Quivig, haud frequens«. Jónsson collected it near Thorshavn on Stereocaulon (Str.). On Rejafjæld (Öst.) at a height of 400 m. Ostenfeld found this species as a gelatinous dark-red crust. It is also mentioned by Wille (l. c. p. 21), and pronounced doubtful by Rostrup (Fær. Fl. p. 92).

6. *G. punctata* Nägl.

Occurs together with the above-mentioned species on Stereocaulon at Thorshavn (Str.).

Rostrup (Fær. Fl. p. 92) mentions *G. janthina* Nägl. as doubtful.

7. *Polycystis pallida* Lemm.¹

Found in Plankton from Sörvaagsvatn (Vaagö).

8. *P. incerta* Lemm.¹

Together with the above-mentioned.

9. *P. fusco-lutea* Hansg. Prodrum II, p. 145, fig. 55.

Together with some other Chroococcaceæ in a dried collection from a ravine (Gjov) near Vaag (Syd.).

10. *Cælosphærium Kützingianum* Nägl.

In a collection of algæ from Sand (Sandö); and in Plankton from the large lake near Ejde (Öst.); Sörvaagsvatn (Vaagö); and the lake in Vaags Ejde (Syd.).

11. *Merismopedia glauca* (Ehrenb.) Nägl.

Found by Rostrup (Fær. Fl. p. 90): »Amongst Sphagnum«. Occurs rather commonly in the collections we have for examination. Also found in Plankton from Sörvaagsvatn (Vaagö); and Sandvatn (Sandö).

12. *M. punctata* Meyen.

Found in Plankton from Sörvaagsvatn (Vaagö); and Sandvatn (Sandö).

13. *M. tenuissima* Lemm.¹

In Plankton from Grothusvatn (Sandö).

14. *Aphanothece microscopica* Nägl.

In Plankton from Sörvaagsvatn (Vaagö); the lake near Ejde (Öst.); and Sandvatn (Sandö).

¹ Determ. by Mr. Lemmermann.

15. **A. prasina** A. Br.Lat. cell. = 6 μ .

Amongst other Chroococcaceæ in a dried collection from a »Gjov« near Vaag (Syd.).

16. **A. saxicola** Nägl.Lat. cell. = 1,5 μ .

Together with the above-mentioned. I am not quite sure as to the correctness of the determination.

17. **Glæothece cystifera** Rabh.Lat. cell. = 5 μ .

From a »Gjov« near Vaag (Syd.).

Order II. CHAMÆSIPHONACEÆ.

18. **Chamæsiphon incrustans** Grun.

On *Microspora amæna* from Gliversrejn near Thorshavn (Str.).

Order III. OSCILLARIACEÆ.

19. **Schizothrix tinctoria** (Ag.) Gom.

The main part of Lyngbye's *Conferva nana* (Hydrophyt. p. 149, Tab. 52) consists of this alga. Judging from Lyngbye's figure it looks very much like *Stigeoclonium tenue* and Wille (l. c. p. 58) is also of this opinion as he under *Stigeoclonium* writes: »It has already been found by Lyngbye, as it is undoubtedly identical with his *Conferva nana* Dillw«¹. With regard to its habitat, Lyngbye writes: »Habitat in lacu subalpino Vandalvatn dicto prope Qvalbœ Suderœ Færoæ, Fontinali antipyreticæ ad ripam habitanti hic illic copiose adnata«. But in spite of a very exact examination of the specimens in Lyngbye's Herbarium, I have not been able to find the slightest trace of *Stigeoclonium*. A packet (with 6 specimens) labelled in Lyngbye's handwriting: »*Conferva nana* var. *Hermannii*« contained mainly *Schizothrix tinctoria* (determined by Mr. Joh. Schmidt) and here and there *Chatophora elegans* and some filaments of *Ulothrix zonata* var. *valida*. On another packet labelled: »*Conferva nana* infans« Lyngbye has written as follows: »in Fontinali antipyretica inter Conf. nanam in lacu vallis prope Qualbœ Suderœ. Cæspes brevis, viridis, lineam unam circiter longus. Fila minuta ramosa; rami remoti, alterni, flaccidi, articuli vix conspicui«. This packet besides *Chatophora elegans* and *Schizothrix tinctoria* contains mainly *Tolypothrix tenuis*.

20. **Lyngbya æruginæa cœrulea** (Kütz.) Gom.

Found among other algæ in a gathering from Svartafoselv near Højvig (Str.). Wille (l. c. p. 22) reports having found this species.

¹ »Den er allerede funden af Lyngbye, idet der neppe kan være nogen Tvivl om, at den er identisk med hans *Conferva nana* Dillw«.

21. *Phormidium uncinatum* (Ag.) Gom.

Specimens collected by Lyngbye: »in saxis maritimis aqua dulci irrigatis ad Højvig prope Thorshavn« and of Lyngbye (Hydrophyt. p. 88) called *Oscillatoria subfusca* are according to Gomont's determination this species; the same is the case with specimens in Lyngbye's Herbarium from Ejde (Öst.).

22. *P. autumnale* (Ag.) Gom.¹

Lyngbye's *Oscillatoria subfusca* β *atra* (Hydrophyt. p. 88) collected: »ad rupes inundatas declives prope Næs Österöe Færoeæ cæpiose«, is according to Gomont's determination this species.

23. *Oscillatoria curviceps* Ag.

Lat. = 15 μ .

Amongst Sphagnum collected by Ostenfeld at Trangisvaag (Syd.).

24. *O. limosa* Ag.

Lat. = 33 μ .

Found among other algæ, carpeting the ground at Trangisvaag (Syd.).

25. *O. tenuis* Ag.

Gliversrejn near Thorshavn (Str.); and in Plankton from Sörvaagsvatn (Vaagö); lake near Ejde (Öst.); and Sandsvatn (Sandö).

With regard to the plant named *Oscillatoria ochracea* (Dillw.) Lyngb. (Hydrophyt. p. 89), no specimens from the Færoes are to be found in Lyngbye's Herbarium, Copenhagen, so I can form no opinion about it.

Order IV. RIVULARIACEÆ.

26. *Dichothrix compacta* (Ag.) Born. and Flah.

Lat. cell. = 6—8 μ .

In gatherings from »Gjov« near Vestmanhavn (Str.) and in a rill at the foot of Örnefjæld near Trangisvaag (Syd.) some small fragments of a *Rivulariaceæ* were found which I think may be referred to the above-named species. The walls were thick and stratified, the cells almost half as long as broad.

A closer investigation of the algæ growing on humid rocks will doubtless prove this species as well as others to be common.

Order V. SIROSIPHONIACEÆ.

27. *Hapalosiphon pumilis* (Kütz.) Kirchn.

Some fragments which appear to me to belong to this species were found mixed with other algæ in a gathering from Sand (Sandö).

¹ In »Danmarks blaagrønne Alger« (Botanisk Tidsskrift. 22. 1899) Johannes Schmidt has united these two species under the name of *Phormidium autumnale* (Ag.) Gomont emend. and I quite agree with him in this.

28. *Stigonema ocellatum* (Dillw.) Thur.

This alga has already been found by Lyngbye as his *Scytonema Myochrous* (Hydrophyt. p. 96): »in insulis Færoensibus sat vulgaris«, is according to Flahault's determination identical with this species; the specimen in Lyngbye's Herbarium is found: »in lacu alpestri rupis Kirkebøe ad Thorshavn«. Rostrup mentions having found it on Gliversrejn near Thorshavn; as reported by Lyngbye it seems on the whole to be rather common I often found it in the material I had for examination.

29. *S. tomentosum* (Kütz.) Hieron.

Bemerkungen über ein. Art. d. Gatt. *Stigonema* Ag. (Hedwigia 1895, p. 166).

Found mixed together with *Trentepohlia aurea* on damp rocks in »Gjov« near Vestmanhavn (Str.).

30. *S. minutum* (Ag.) Hass.

Found amongst other algæ from the bottom of a small pond near Trangisvaag (Syd.); and mixed with *Gloescapsa Magma* on *Stereocaulon* from Thorshavn (Str.).

31. *S. turfaceum* Cooke.

Wille (l. c. p. 24) reports having found this species.

32. *S. informe* Kütz.

In a gathering from the Færøes. Habitat not given.

33. *S. mamillosa* (Lyngb.) Ag.

At the foot of Örnefjæld near Trangisvaag (Syd.); »Gjov« near Vestmanhavn (Str.); and on mountain heights (450 m.) on Bórdö.

Lyngbye mentions this species in Hydrophyt. p. 85 as *Bangia mamillosa*, but says that he has not met with it in the Færøes. However, in his herbarium there is a very small specimen labelled: »in saxis ad ripam lacus Kirkevátu prope Famöye, Suderøe«.

The *Bangia atrovirens* mentioned by Lyngbye in Hydrophyt. p. 85 and gathered by him on subalpine rocks is *Ephebe* sp.

Order VI. SCYTONEMACEÆ.

34. *Scytonema mirabile* (Dillw.) Born.

Bulletin Soc. bot. de France, tome 36.

Some specimens of Lyngbye's *Scytonema myochrous* f. *simplex* (Hydrophyt. p. 96) are according to Flahault's determination identical with this species. I have found it in collections from Thorshavn (Str.); and Grothusvatn (Sandö).

35. *Tolypothrix tenuis* Kütz. Joh. Schmidt emend.

Specimens collected by Lyngbye »in rupe Kirkeboe ad Thorshavn« and named by him *Conserva myochrous* f. *simplex* (Hydrophyt. p. 96)

are according to Flahault's determination identical with *Tolypothrix lanata* (Desw.) Wartem. Joh. Schmidt (l. c. p. 383) gives these two species — *T. tenuis* and *T. lanata* — under the name of *T. tenuis* Kütz. emend.

Another specimen in Lyngbye's Herbarium determined by him as *Scytonema ocellatum*? and collected, »in scrobiculis aquæ dulcis ad littus Eldevig, Österö«, and labelled in Lyngbye's handwriting: »Ramuli in hoc exemplum haud gemini, sed simplices ut in deliniatione Dillwyniana Conf. oscillator.« appears to me also to belong to this species. Again another of Lyngbye called *Scytonema myochrous inundatum* infans (comp. Hydrophyt. p. 96) is according to Flahault this species. In Bornet and Flahault's »Revision« p. 121 *Oscillatoria distorta* is mentioned as a synonym on the faith of specimens in Thuret's Herbarium.

I have found this species in gatherings from Thorshavn (Str.); Selletræ (Öst.); Midvaag (Vaagö); Kvalbö (300 m.) and Trangisvaag (Syd.).

36. *Desmonema Wrangelii* (Dillw.) Born. and Flah.

A small fragment of this alga has been found in a gathering from a stream near Vedvig on Viderö.

Order VII. NOSTOCACEÆ.

37. *Nostoc carneum* (Lyngb.) Ag.

Lyngbye calls it *Nostoc commune* β *carneum* (Hydrophyt. p. 199). In Lyngbye's Herbarium there are some specimens of this species from Højvig (Str.); and Eldevig (Öst.); they are determined by Flahault. Professor Warming gathered it on rocks near Trangisvaag (Syd.).

38. *N. commune* Vauch.

Mentioned by Lyngbye as found in the Færøes (Hydrophyt. pp. 198—99) but no specimens of this species from the Færøes are to be found in Lyngbye's Herbarium.

The species mentioned by Landt¹ as *Tremella Nostoc* is probably, as Wille (l. c. p. 22) also means, identical with this species.

39. *N. pruniforme* Ag.

Found in a ravine at Kvanhauge near Trangisvaag (Syd.). Mr. Joh. Schmidt has kindly determined it for me.

Rostrup (l. c. p. 92) is doubtful as to the correctness of the determination of *Nostoc paludosum* Kütz. and *N. minutissimum* Kütz.; according to Bornet and Flahault (Revision p. 221) the latter cannot be regarded as a distinct species.

40. *Anabæna variabilis* Kütz.

Amongst *Cladophora Lyngbyei* nov. spec. in »Gjov« near Trangisvaag (Syd.).

41. *Nodularia sphærocarpa* Born. and Flah.

Found by Wille (l. c. p. 22) in collections from Kirkebö (Str.).

¹ J. Landt: »Forsøg til en Beskrivelse over Færoerne«, Kjøbenhavn 1800, p. 225.

II. Chlorophyceæ.

Conjugatæ.

Order VIII. DESMIDIACEÆ.

42. *Sphærozosma vertebratum* (Bréb.) Ralfs.

Rostrup (Fær. Fl. p. 91) has found this species on moss (Str.).

43. *S. pulchellum* Arch.

Mr. Lemmermann kindly tells me that he has seen this species in some Plankton from Sörvaagsvatn (Vaagö).

f. *minor* Gay (*Spondylosium tetragonum* West).

Long. = 8μ = lat.

Skopen (Sandö).

44. *S. excavatum* Ralfs.

Gliversrejn near Thorshavn (Str.); Klakken near Klaksvig (Bordö); Skopen (Sandö); also found in Plankton from Sörvaagsvatn (Vaagö).

45. *Hyalotheca dissiliens* (Dillw.) Bréb.

Rather commonly dispersed; both a broad and a slender form (var. *major* and *minor* Delponte) have been found. It occurred too in Plankton from Sörvaagsvatn (Vaagö); and Grothusvatn (Sandö).

Var. *bidentula* Nordst.

Midvaag (Vaagö); Trangisvaag (Syd.); Skopen (Sandö); Svartafoselv near Thorshavn (Str.).

46. *Bambusina Brébissonii* Kütz. (*Didymoprium Borreri* Ralfs.).

Bog near Højvig (Str.); Klakken near Klaksvig (Bordö).

47. *Desmidium cylindricum* Grev. (*Didymoprium Grevillei* Kütz.).

Mentioned by Rostrup (l. c. p. 91). I found it in a gathering from Svartafoselv near Thorshavn (Str.).

48. *Mesotænum micrococcum* (Kütz.) Kirchn.

Found as a part of some green gelatinous clumps collected from the bottom of a small pond near Thorshavn (Str.).

49. *M. Braunii* De Bary.

Mixed with *Prasiola crispa* on moist roofs in Thorshavn (Str.).

50. *M. chlamydosporum* De Bary.

In the same locality as the preceding species.

51. *Cylindrocystis Brébissonii* Menegh.

Rather common in the collections.

52. *Gonatozygon asperum* (Bréb.) Cleve. *G. Brébissonii* De Bary.

Conj. p. 77, tab. 4, figs. 26—27.

In a gathering from Skopen (Sandö).

53. **G. Ralfsii** De Bary.

L. c., tab. 4, fig. 24—25.

Found here and there. Also in Plankton from Sörvaagsvatn (Vaagö).

54. **Penium margaritaceum** (Ehrenb.) Bréb.

Seems to be common; found in gatherings from Klakken near Klaksvig (Bordö); Kirkebökamp (Str.); Midvaag (Vaagö) (in the latter place with spores like those in Ralfs's figure, Brit. Desm. tab. 33, fig. 3); Viderejde (Vid.); Grothusvatn (Sandö); Trangisvaag (Syd.).

55. **P. Cylindrus** (Ehrenb.) Bréb.

Klakken near Klaksvig (Bordö); Midvaag (Vaagö); Viderejde (Vid.); Trangisvaag (Syd.); Grothusvatn (Sandö).

56. **P. Digitus** (Ehrenb.) Bréb.

Mentioned by Rostrup (Fær. Fl. p. 90) and afterwards found by Wille (l. c. p. 28); it seems to be common, as it often appeared in the material I had for examination.

57. **P. lamellosum** Bréb.

Mentioned by Rostrup (Fær. Fl. p. 90).

58. **P. oblongum** De Bary.

Conjugaten tab. 7, fig. G.

Lat. = 26 μ .

Thorshavn (Str.).

59. **P. closterioides** Ralfs.

Højvig (Str.); Sand (Sandö); Trangisvaag (Syd.).

60. **P. Navicula** Bréb.

Lat. = 14 μ .

At the foot of Skjællingfjæld (Str.).

61. **P. crassiusculum** De Bary.

The specimens from the Færøes are very much like the Brazilian form figured by me in Desm. Brasil. pp. 931—32, tab. 2, fig. 1.

Long. = 80 μ ; lat. = 22—35 μ .

Found near Trangisvaag at a height of 200 m. (Syd.); at Kirkebökamp (Str.).

62. **Pleurotænium Ehrenbergii** (Ralfs). *Docidium Ehrenbergii* Ralfs.

The specimens from the Færøes are often just like the figures given by Ralfs (Brit. Desm. tab. 26, fig. 4); forms, however, are sometimes found with semicells somewhat swollen at the base and bearing a close resemblance to *Pleurotenium maximum* (Reinsch) Lund.

Judging from its numerous habitats this species appears to be common.

63. **P. nodulosum** (Bréb.) De Bary.

Ralfs Brit. Desm. tab. 26, fig. 1.

Rare; only found in a gathering from Skopen (Sandö).

64. **Docidium Baculum** Bréb.

Found already by Rostrup (Fær. Fl. p. 90); I have pretty often found this species in different gatherings.

65. **D. minutum** Ralfs.

Found here and there.

f. **minor**

Wille (l. c. p. 28) mentions having found this form.

66. **Tetmemorus granulatus** Bréb.

Very common in the Færøes; it has been already mentioned by Rostrup (Fær. Fl. p. 90) and Wille (l. c. p. 29).

67. **T. Brébisonii** (Menegh.) Ralfs.

Also widely spread in the Færøes; mentioned by Rostrup (Fær. Fl. p. 90).

Var. **minor** De Bary.

Found in Sphagnum-bog near Højvig (Str.).

68. **T. lævis** (Kütz.) Ralfs.

Occurs here and there in the collections; also found by Wille (l. c. p. 29).

69. **Spirotænia muscicola** De Bary.

Rostrup found this species on moss from Strømø (Fær. Fl. p. 91).

70. **Closterium didymotocum** Corda.Lat. = 31μ .

Sand (Sandö); in bog near Højvig (Str.).

71. **C. Lunula** (Müll.) Nitzsch.

Svartafoselv near Højvig (Str.).

72. **C. Ehrenbergii** Menegh.Lat. = 80μ .

Found in two gatherings from bare stony ground at a height of 200—300 m. near Trangisvaag (Syd.); also mentioned by Wille (l. c. p. 26).

73. **C. moniliferum** (Bory) Ehrenb.Lat. = $60\text{--}70\mu$.

Habitat not given.

74. **C. Leibleinii** Kütz.

Rostrup (l. c. p. 91) mentions having found this species.

75. **C. Dianæ** Ehrenb.

Watercourse near Thorshavn (Str.); Trangisvaag (Syd.); Sörvaagsvatn (Vaagö) and other places; seems to be rather common.

76. **C. Venus** Kütz.

Kvalbö (300 m.) (Syd.).

77. **C. Cornu** Ehrenb.

Lat. = 6 μ .

Amongst Sphagnum in bog near Højvig (Str.).

Forma *elongata* Rab.

Found by Rostrup (Fær. Fl. p. 91).

78. **C. acutum** (Lyngb.) Bréb.

Kirkeböcamp near Thorshavn (Str.); Trangisvaag (200 m.) (Syd.).

79. **C. Jenneri** Ralfs.

A form just like Ralfs's figure (Brit. Desm. tab. 28, fig. 6).

Found in gatherings from bog near Højvig and Kirkeböcamp near Thorshavn (Str.); and Viderejde (Vid.).

80. **C. gracile** Bréb.

Lat. = 54 μ .

Skopen (Sandö); Viderejde (Vid.); Svartafoselv at Højvig (Str.).

81. **C. macilentum** Bréb.

Skopen (Sandö).

82. **C. lineatum** Ehrenb.

Found by Rostrup (Fær. Fl. p. 91).

83. **C. directum** Arch.

Lat. = 17 μ .

Sand (Sandö).

84. **C. juncidum** Ralfs.

Skopen (Sandö).

Forma β Ralfs.

Lat. = 14 μ .

Amongst Sphagnum in bog near Højvig (Str.).

85. **C. striolatum** Ehrenb.

Kirkeböcamp and Thorshavn (Str.); Klakken near Klaksvig (Bordö); Midvaag (Vaagö).

86. **C. intermedium** Ralfs.

Trangisvaag (Syd.); Midvaag (Vaagö); Thorshavn (Str.).

87. **C. Kützingii** Bréb.

Lat. = 22 μ .

Rather rare in Plankton from Sörvaagsvatn (Vaagö).

88. **C. rostratum** Ehrenb.

Lat. = 27 μ .

Watercourse near Famienvatn (Syd.); Nolsö; »Gjov« near Vestmanhavn (Str.).

89. **C. costatum** Corda.

Found already by Rostrup (Fær. Fl. p. 91) and re-discovered in many localities.

90. **Micrasterias pinnatifida** Kütz.

Seems to be rare. I have only found this species in some very rich gatherings from Sand (Sandö).

91. **M. oscitans** β **mucronata** (Dixon) Wille.

The specimens from the Færöes are very much like Wille's figure. (Norges Ferskvandsalger, p. 21, tab. 1, fig. 3).

It has only once been found in a very rich collection from Kirkebökamp (Str.).

92. **M. truncata** (Corda) Bréb.

The specimens from the Færöes are rather like Ralfs's figure (Brit. Desm., tab. X, fig. 5 b) but the angles of the polar-lobe are rounded off without teeth.

Long. = 102 μ ; lat. = 99 μ .

Kirkebökamp and Thorshavn (Str.); Sand (Sandö).

93. **M. denticulata** Bréb.

Three small rounded protuberances are found at the base of the semicells and the specimens from the Færöes appear therefore to correspond closely to Archer's¹ minute description of this species.

It seems to be rather common; it has been found in collections from Midvaag (Vaagö); Svartafoselv near Højvig (Str.); Skopen and Sand (Sandö); Trangisvaag (Syd.).

94. **Euastrum ansatum** Ehrenb.

This species which has already been found by Rostrup (*E. Ralfsii* Rab. Fær. Fl. p. 90) is a commonly distributed plant. Forms like Ralfs's

¹ Archer: On a new species of *Micrasterias*, in *Micr. Journal*. Vol. II, N. S. p. 236, tab. 12, fig. 6, 7, 8.

figures 2 a and 2 b (l. c. tab. XIV) have been met with. The first mentioned form was seen in gatherings from a watercourse near Thorshavn (Str.) and a bog near Trangisvaag (Syd.), the latter form was rather common.

95. *E. crassum* (Bréb.) Kütz. Plate VII, figs. 1 and 1'.

It is a well-known fact that this species varies very much¹ and the specimens from the Færøes also vary considerably in form. They correspond most closely to Lundell's forms (Desm. Suec. p. 17, tab. I, fig. 10 and tab. II, fig. 1) as in front view they are comparatively broader than Ralfs's figures, and in vertical view are considerably thicker, and the deeply undulating outline seen in Ralfs's figures is wanting. Both the main form and var. *scrobiculata* have been found. With regard to the main form as shown in fig. 1 (Plate VII) it was the swellings on the side of the semicells seen from the base which varied, they were sometimes rather sharply marked and sometimes they gradually merged into the sides of the cells. This larger swelling is the middle one of the 3 protuberances seen at the base of the semicells. In the middle of the semicells in front view were two or three slight but — especially when the cells were dry — fairly distinct elevations. The size of the cells was rather small.

Long. = 135 μ ; lat. = 75 μ ; crass. = 62 μ .

Var. *scrobiculata* Lund. Plate VII, fig. 1'.

Putting aside some less essential differences in the shape of the cells, they correspond fairly well with Lundell's figures (l. c. tab. II, fig. 1); on the sides of the semicells in front view there were 2 protuberances, and between them, somewhat lower down, a depression.

Long. = 154 μ ; lat. = 80 μ ; lat. isthm. = 24 μ ; crass. = 54 μ .

The main form was found on Kirkebøkkamp near Thorshavn (Str.); Klakken near Klaksvig (Bordø); Skopen and Sand Sandø; and the variety in gatherings from Klakken (Bordø); and Sand (Sandø).

E. magnificum var. *crassoides* Hastings². Dr. O. Nordstedt called my attention to this species which must most correctly be considered as a form of *E. crassum*.

96. *E. oblongum* (Grev.) Ralfs.

The specimens from the Færøes bear a close resemblance to Ralfs's figures (l. c. tab. XII). The species seems to be rather common as it has been found in many different places.

¹ See Wildemann: Observations sur quelques Desmidiées.

² Hasting: New Desmids from Hampshire in The American monthly microscopical Journal, Vol. 13, 1892. p. 153.

Forma scrobiculata Nordst.

Has been found in material from Svartafoselv near Højvig (Str.); and in Plankton from Sörvaagsvatn (Vaagö).

97. E. Didelta (Turp.) Ralfs.

This species was already mentioned by Rostrup (Fær. Fl. p. 90). I have found it in gatherings from Thorshavn (Str.); Midvaag (Vaagö); and Trangisvaag (Syd.).

98. E. humerosum Ralfs.

I have found specimens which bear a close resemblance to Ralfs's fig. 2 (l. c. tab. XIII) in gatherings from Klakken near Klaksvig (Bordö); and from a Sphagnum-bog near Højvig (Str.).

99. E. ampullaceum Ralfs.

Specimens just like Ralfs's fig. 4a (l. c. tab. XIII) were observed in collections from Kirkebökamp (Str.); and Klakken near Klaksvig (Bordö).

Long. = $96\ \mu$; lat. = $60\ \mu$.

Forma scrobiculata Nordst.

Norges Desm. p. 8, Plate VII, fig. 3.

Compare Schmidle's figure of this form in his work: »Ueber einige von Knut Bohlin in Pite Lappmark und Vesterbotten gesammelte Süsswasseralgen« p. 45, tab. 11, fig. 23.

The arrangement of the protuberances is somewhat different from my figure.

Kirkebökamp (Str.).

100. E. sinuosum Lenorm.

Ralfs's fig. 3 (l. c. tab. XIII).

Long. = $67\ \mu$.

Sand (Sandö).

101. E. pinnatum Ralfs.

Like Ralf's figures (l. c. tab. XIII, fig. 1).

Long. = $125\ \mu$.

Klakken near Klaksvig (Bordö); Grothusvatn (Sandö).

102. E. insigne Hass.

Ralfs l. c. tab. XIII, fig. 6.

Thorshavn and Kirkebökamp (Str.); Klakken near Klaksvig (Bordö).

103. E. verrucosum Ehrenb. Plate VII, figs. 2 and 2¹.

Of this very variable species I have found two different forms from the Færöes:

The first of these (Plate VII, fig. 2) approaches very near to Ralfs's figures (l. c. tab. XI, fig. 2) with regard to its outline, it only

differs from it in the sinuses being less deep, this applies more particularly to the sinuses on both sides of the polar lobe.

Long. = $97\ \mu$; lat. = $88\ \mu$; crass. = $51\ \mu$.

Svartafoselv at Højvig (Str.); Skopen and Grothusvatn (Sandö).

The second form (Plate VII fig. 2') was likewise characterized by being less deeply sinuated and especially by the broad rounding of the lower angles of the semicells; seen from the base the semicells were oblong quadratic. It is to be supposed that this form is produced by individuals which are in active division; it seems to be a similar form which West calls var. *coarctatum* Delp. forma (Freshwat. Algæ of West Ireland p. 136, tab. XX, fig. 11).

Long. = $88-92\ \mu$; lat. = $70\ \mu$; crass. = $51\ \mu$.

Found mixed together with the above-mentioned in Svartafoselv near Højvig (Str.).

104. *E. gemmatum* Bréb.

Svartafoselv near Højvig (Str.); Grothusvatn (Sandö).

105. *E. inerme* (Ralfs) Lund. Plate VII, fig. 4.

The specimens from the Færøes correspond closely to the original figure of Ralfs (Brit. Desm. tab. XIV, fig. 7c); in comparing the specimens from the Færøes with Lundell's figures (Desm. Suec. tab. II, fig. 3) I found that the 3 protuberances at the base of the semicells which are conspicuous in his figures were absent in the specimens from the Færøes.

Kirkebölkamp (Str.); Klakken near Klaksvig (Bordö); Sand (Sandö).

106. *E. pectinatum* Bréb.

Seems to be rather common; it has been found near Midvaag (Vaagö); Klakken near Klaksvig (Bordö); Skopen (Sandö); and Svartafoselv near Højvig and Thorshavn (Str.).

107. *E. Lyngbyei* nov. sp. Plate VII, fig. 5.

E. submediocre, diametro subduplice longius, incisura mediana profunda lineari in exteriore parte ampliata. Semicellulæ trilobæ, angulis dentibus munitis fere rectis, apice truncato medio tumoribus 3 ornatae; a vertice visæ ellipticæ lateribus 3 prominentibus instructæ; a latere fere ovatae.

Long. = $55\ \mu$; lat. = $37\ \mu$; lat. isthm. = $9\ \mu$; crass. = $21,6\ \mu$.

In a gathering from Sand (Sandö).

In front view this species resembles somewhat *Euastrum pectinatum* Forma Lundell (Desm. Suec. p. 17, tab. 1, fig. 8).

108. *E. rostratum* Ralfs.

Rostrup mentions having found this species in »Tarn on Gliversrejn« (Str.).

109. *E. elegans* (Bréb.) Kütz.

A watercourse near Trangisvaag (Syd.); Sand (Sandö); Klaksvig (Bordö); Skjælling (Str.).

Var. *bidentata* Näg.

Nolsö; Kirkebökamp near Thorshavn (Str.).

110. *E. binale* (Turp.) Ralfs.

Mentioned by Rostrup (Fær. Fl. p. 90); I found it in a gathering from Skjælling (Str.).

Var. *denticula* Kirchn.

Moor near Höjvig (Str.).

111. *Cosmarium Cucumis* Corda.

This species which has already been found by Rostrup (Fær. Fl. p. 90) and Wille (l. c. p. 27) is very commonly distributed in the Færøes; in the different localities it varies very much with regard to its size and the outline of the cell. Most common are forms like Ralfs's fig. 2, tab. 15 in Brit. Desm.; but specimens very much like Nordstedt's figures in Desm. arctoæ tab. 7, fig. 28 and 29 are also found. The latter (forma *major* Nordst.) occurs rather high up in the mountains. In gatherings from bare stony ground near Trangisvaag (300 m.) and from mountain heights on Bordö (450 m.); in the latter place mixed with some Arctic Desmids.

112. *C. quadratum* Ralfs.

Met with by Rostrup (Fær. Fl. p. 90) in »Tarn on Gliversrejn« (Str.).

I have found the following different forms: —

A form like Ralfs's fig. 1a (l. c. tab. 15).

Trangisvaag and Kvalbø (Syd.); Sand (Sandö); Kirkebökamp near Thorshavn (Str.).

Forma »semicellulæ lateribus nonnunquam latissime rotundatis l. rectis, nec retusis« Wille Novaj. Semlj. p. 37, tab. 12, fig. 20; the membrane, however, is thinner in the specimens from the Færøes.

Kirkebökamp near Thorshavn (Str.).

Forma *major* Wille l. c. fig. 21.

Long. = 75 μ ; lat. = 38 μ .

Grothusvatn (Sandö).

113. *C. sinuosum* Lund. forma *genuina*.

Wille reports (l. c. p. 27) that this species seldom appeared in the collections which he has examined.

114. **C. Schübelerii** Wille. Plate VII, fig. 7.

Forma færøensis a forma typica præcipue differt magnitudine cellulæ paullo majore, apice semicellularum medio non retuso sed late rotundato-truncato; a vertice visæ apicibus latioribus.

Long. = 121 μ ; lat. = 102 μ ; lat. isthm. = 27 μ ; crass. = 54 μ .

I have only seen a few specimens of this species, but unfortunately the structure of the chlorophyl was indistinct. It seems to me to be very much like *C. Ralfsii* Bréb. (Ralfs Brit. Desm. tab. 15, fig. 3) but it differs from it in the more broadly truncate apices of the semicells and in the cells being greater in breadth in proportion to their length.

This species was only found in a very rich gathering from Kirkebø-kamp near Thorshavn (Str.).

115. **C. Cucurbita** Bréb.

Ralfs l. c. tab. 17, fig. 7.

Long. = 22 μ .

Occurs in gatherings from Trangisvaag (Syd.); Thorshavn, Kirkebø-kamp, Højvig and Skjælling (Str.).

116. **C. pachydermum** Lund.

The specimens from the Færøes which I have placed under this species are all much smaller, their dimensions answer to those which Nordstedt gives for the var. *minus* Nordst. Norges Desm. p. 18, but with regard to the outline of the cell the specimens from the Færøes come nearer to the typical form.

Long. = 52—62 μ ; lat. = 38—40 μ .

Kalsø; Thorshavn (Str.); Sand (Sandö).

117. **C. perforatum** Lund. var. *rotundata* nov. var. Plate VII, fig. 6.

A forma typica var. *rotundata* differt, cellulis fere circularibus, apice semicellularum medio tantum vix truncato, incisura mediana acutissime angulata extrorsum sensim dilatata; membrana distincte punctata, medio ad bases semicellularum crassiore scrobiculis minutis (a vertice visibilibus!) instructa; a vertice visæ semicellulæ subhexagonæ-ellipsoideæ.

Long. = 71 μ ; lat. = 60; lat. isthm. = 33 μ ; crass. = 38 μ .

In a gathering from Sand (Sandö).

This variety seems to resemble very closely the form described by Boldt in »Desm. från Grönland« p. 14; also in vertical view the specimens from the Færøes are slightly »subhexagona«.

118. **C. decedens** Reinsch. Plate VII fig. 9.

Forma færoensis figuræ Reinschii (Algenfl. von Franken tab. IX, fig. d) proxima, differt incisura mediana tenuiore et minus profunda; cellula paullo major.

Long. = $54\ \mu$; lat. = 29 ; lat. isthm. = $21\ \mu$; crass. = $19\ \mu$.

Seen in front view this form differs from that of Nordstedt (Desm. arct. p. 38, tab. 8, fig. 41) in the more rounded angles of its cell; in lateral view the apex of the semicell is more broadly rounded, and in vertical view the outline is broad elliptical without the swelling at the middle of each side.

In gatherings from Kirkebökamp (Str.); and Nolsö.

Dr. Nordstedt told me that in Scotland he had collected a form very similar to it.

119. **C. anceps** Lund.

This species appears in collections from bare stony ground near Trangisvaag (300 m.) (Syd.); and from mountain heights on Bordö (450 m.).

Wille (l. c. p. 26) mentions having seen this species.

120. **C. granatum** Bréb.

Ralfs Brit. Desm. tab. 32, fig. 6.

Seems to be rather common. Found in gatherings from Kirkebökamp (Str.); Nolsö; Sand (Sandö); Trangisvaag (Syd.); and in Plankton from the lake in Vaags Ejde (Syd.).

Forma fere similis figuræ Klebsii (Desm. Ostpreus. tab. III, fig. 23).

Long. = $35\ \mu$; lat. = $25\ \mu$; lat. isthm. = $7\ \mu$.

Kirkebökamp (Str.).

121. **C. læve** Rab.

In a collection of algæ from bare stony ground between Kvalbø and Trangisvaag (200—300 m.) (Syd.) a Cosmarium was found which I think may be referred to the above-named species; it is rather like Nordstedt's fig. 4, tab. XII in Desm. Ital.

122. **C. microsphinctum** Nordst. β **crispulum** Nordst.

A form very like Wille's forma »apicibus rotundatis« (Novaj. Semlj. p. 38, tab. 12, fig. 23) but with a somewhat thinner membrane was found in a gathering of algæ from mountain heights on Bordö (450 m.).

Long. = $43\ \mu$; lat. = $27\ \mu$.

123. *C. pseudopyramidatum* Lund.

Forma **major** Lund. Desm. Suec. p. 41.

Long. = $51\ \mu$; lat. = $32\ \mu$.

Klakken near Klaksvig (Bordö).

* **maxima** n. subsp. Plate VII, fig. 8.

»Forma major excavata« Nordst. (Freshw. Algæ p. 54, tab. 6, fig. 1), ut mihi videtur, proxima. Ab hac forma subspecies maxima præcipue differt magnitudine cellularum tertia parte majore, apice semicellularum late rotundato vix truncato. Membrana evidenter granulata.

Long. = $105-8\ \mu$; lat. = $60-68\ \mu$; lat. isthm. = $24\ \mu$; crass. = $46-54\ \mu$.

Unfortunately in the few specimens I have seen, the structure of the chlorophyll was indistinct.

Kirkebölkamp near Thorshavn (Str.).

124. *C. Holmiense* Lund. β **integrum** Lund.

Desm. Suec. p. 49.

In different collections from the neighbourhood of Trangisvaag (Syd.).

Forma. Nordstedt Desm. Spetsb. p. 28, fig. 5a.

In a gathering from mountain heights (450 m.) on Bordö.

125. *C. tetragonum* Nägl. f. **Lundellii**.

Lundell Desm. Suec. p. 42, tab. 2, fig. 21.

Long. = $46\ \mu$; lat. = $27\ \mu$.

Found in a collection which Mr. Feddersen gathered near Trangisvaag (Syd.).

126. *C. homalodermum* Nordst.

Appears to be very variable, as the sides of the semicells are sometimes concave sometimes convex, but I have seen so many intermediate forms that I feel quite justified in referring them all to this species. I have not seen forms, exactly like Nordstedt's figures (Desm. arct. tab. 6, fig. 4).

Long. = $60-70\ \mu$; lat. = $51-58\ \mu$; lat. isthm. = $18-19\ \mu$.

Selletræ (Öst.); ravine near Tværaa (Syd.); Grothusvatn (Sandö); Nordredal (Str.); Höjffjæld on Bordö (450 m.).

Var. **rotundata** Wille.

Nov. Semlj. p. 36, tab. 12, fig. 18.

Found in a gathering from Tværaa (Syd.).

127. *C. Braunii* Reinsch.

Algenfl. Frank. p. 114, tab. X, fig. 3.

Long. = $37\ \mu$; lat. = $24\ \mu$; lat. isthm. = $5\ \mu$.

Höjvig (Str.).

128. **C. venustum** (Bréb.) Arch.

Rostrup mentions having met with this species (Fær. Fl. p. 90).

I found it in gatherings from Höjvig and Thorshavn (Str.). There were no depressions in the middle of the semicells in the specimens collected by me.

129. **C. Phaseolus** Bréb.

Var. **typica** Klebs. Desm. Ostpreuss. tab. 3, fig. 41—42.

Kirkebökamp (Str.); Klakken near Klaksvig (Bordö); Skopen and Grothusvatn (Sandö).

Var. **elevata** Nordst.

Thorshavn (Str.); Skopen (Sandö).

Var. **achondra** Boldt. Forma.

F. færoensis differt longitudine cellulæ præ latitudine paululum minore. Cfr. Borge, Alg. Not. (Bot. Not. 1897) p. 212, tab. 3, fig. 2.

Long. = 36 ; lat. = $40\ \mu$.

In Plankton from Sandsvatn (Sandö).

130. **C. subtumidum** Nordst.

Mr. Lemmermann very kindly tells me that he has seen this species in Plankton from Sörvaagvatn (Vaagö).

131. **C. Scenedesmus** Delponte.

The specimens from the Færöes bore a rather close resemblance to my figure in »Ferskvandsalg. fra Østgrønland« p. 20, tab. 1, fig. 14.

Long. = $43\ \mu$; lat. = $46\ \mu$; lat. isthm. = $11\ \mu$.

Watercourse near Thorshavn (Str.); Skopen (Sandö).

132. **C. ellipsoideum** Elfv.

Long. = $30\ \mu$; lat. = $25\ \mu$.

Klakken near Klaksvig (Bordö).

133. **C. moniliforme** (Turp.) Ralfs.

Found by Rostrup (Fær. Fl. p. 90). Appears in gatherings from ravine near Vestmanhavn (Str.); and from Klakken near Klaksvig (Bordö).

134. **C. tinctum** Ralfs.

Rostrup (Fær. Fl. p. 91) mentions this species; it seems to be rather common.

135. **C. Schliephackeanum** Grun.

The specimens from the Færöes were just like Nordstedt's fig. 15a (Desm. arct. p. 24, tab. 7).

Long. = $16\ \mu$; lat. = $14\ \mu$; lat. isthm. = $9\ \mu$.

Klaksvig (Bordö).

136. **C. Regnellii** Wille.

Forma **minor** Boldt. Sibir. Chloroph. p. 103, tab. 5, fig. 8.

Long. = $14,5\ \mu$; lat. = $12,5\ \mu$.

Pool of water near Thorshavn (Str.).

137. **C. capitulum** Roy & Biss. var. **Groenlandica** Börgs.

»Ferskvandsalg. fra Østgrønland.« p. 16, tab. 1, fig. 5.

The specimens from the Færøes closely resemble my figure.

Long. = $23\ \mu$; lat. = $21\ \mu$.

Grothusvatn (Sandö).

138. **C. Nymannianum** Grun. f. **brevior** Wille.

Norges Ferskvandalg. p. 32, tab. 1, fig. 17.

Long. = $43\ \mu$; lat. = $35\ \mu$; crass. = $23\ \mu$.

Sand (Sandö).

139. **C. undulatum** Corda.

Found by Rostrup in »damp peaty soil near Sandegærde« (Fær. Fl. p. 90) (Str.).

140. **C. Meneghinii** Bréb.

Forma **vulgaris** Jacobs.

Ralfs Brit. Desm. tab. XV, fig. 6.

Trangisvaag (Syd.); Skopen (Sandö).

Forma **De Bary Conjug.** tab. 6, fig. 33.

Kirkebökamp (Str.); Nolsö; Skopen (Sandö).

Forma **intersepta** Jacobs.

Thorshavn (Str.); Klaksvig (Bordö).

Forma **angulosa** (Bréb.) Rab.

Kirkebökamp (Str.).

Forma **latiuscula** Jacobs.

De Bary l. c. tab. 6, fig. 34.

Kirkebökamp (Str.).

Forma **Reinschii** Istv.

Borge Sib. Chlorophyc. p. 12, fig. 8.

Sand (Sandö).

Forms like my figure in »Ferskvandsalg. fra Østgrønland.« tab. 16, fig. 9.

Trangisvaag (Syd.).

Finally Wille (l. c. p. 27) mentions having seen forms, »some of which bore a striking resemblance to some of Delponte's figures (Spec. Desm. Subalp. tab. VII, fig. 5), and some forms which corresponded closely to *C. Meneghini* forma *octangularis* Wille (Ferskvandsalg. Novaj. Semlj. p. 43, tab. XII, fig. 35).

141. *C. Regnesi* Reinsch.

The specimens from the Færøes seem to correspond closely to the forms mentioned by Nordstedt (Desm. från Bornholm p. 197); cfr. var. *montana* Schmidle Hedwigia 1895, p. 74, tab. 1, fig. 9¹.

Sandö.

142. *C. Nowæ Semliæ* Wille.

Ferskvandsalg. Novaj. Semlj. p. 46, tab. 13, fig. 45.

Long. = 16μ ; lat. = 12μ ; lat. isthm. = 9μ .

Kirkeböklamp (Str.).

143. *C. striatum* Boldt.

Skopen (Sandö).

In Grothusvatn (Sandö) a small *Cosmarium* was found which is probably identical with *C. Danicum* Börgs., but as I have not seen the arrangement of the granula I am not sure as to the correctness of the determination.

Long. = 16μ = lat.

144. *C. boreale* nov. sp. Plate 7, fig. 10.

C. minimum tam longum quam latum medio profunde constrictum sinu fere lineari in exteriori parte ampliata; semicellulæ oblongæ basi dorsoque fere lineari, angulis late rotundatis, a vertice visæ oblongæ. Membrana distincte granulate-punctata. Cellulæ in mucro inclusæ. Nuclei amylocei singuli.

Long. = 14μ = lat.; lat. isthm. = $5,4\mu$; crass. = 6μ .

Klakken near Klaksvig (Bordö).

Nearst related seems *C. suborthostichum* Rac. Desmidia Ciastoni p. 374, tab. 6, fig. 14.

145. *C. portianum* Arch. var. *nephroideum* Wittr.

Thorshavn and Svartafoselv (Str.); Sand (Sandö).

146. *C. præmorsum* Bréb.

Long. = 48μ ; lat. = $38-40\mu$; crass. = $27-30\mu$.

Gliversrejn (Str.); Viderejde (Vid.).

¹ See also G. S. West: On variation in the Desmidiæ (Journ. Linn. Societ. vol. XXVII, p. 365).

147. *C. punctulatum* Bréb.

Gliversrejn (Str.); Skopen and Sand (Sandö).

148. *C. subpunctulatum* Nordst.

In a gathering from Klakken near Klaksvig (Bordö) a form was found which closely resembled my form in »Bornh. Desm.» p. 144, tab. 6, fig. 4.

Long. = $32\ \mu$; lat. = $26\ \mu$.

This form is later on described by West as a new variety: var. *Boergesenii* West (Freshw. Alg. of West Ireland p. 154), but it is very doubtful if this ought to be retained as we are here dealing with a species highly variable and rich in forms (cfr. Schmidle: Ueber die individuelle Variabilität einer Cosmarienspecies, Hedwigia 1893); cfr. also Borge N. Notar. 5, p. 511.

In the large lake near Ejde (Öst.) a closely related form was found in Plankton.

149. *C. subspeciosum* Nordst.

Occurs in gatherings from Skjælling (Str.); and from mountain heights (450 m.) on Bordö. It was also found by Wille (l. c. p. 27).

150. *C. speciosum* Lund.

Trangisvaag and at the foot of Örneffjæld (Syd.); Grothusvatn (Sandö): mountain heights (450 m.) on Bordö.

Var. *biforme* Nordst. Desm. Spetsb. p. 30, tab. 6, fig. 11.

Long. = $72\ \mu$; lat. = $53\ \mu$.

Mountain heights, (450 m.) on Bordö.

151. *C. coelatum* Ralfs.

Seems to be rather common in the Færöes; it often occurs in gatherings, which are rich in Diatoms, but poor in Chlorophyceæ; it was also found in a gathering from Bordö gathered at a height of 450 m.

β *spectabile* Nordst.

In a collection from Klaksvig (Bordö).

152. *C. Boeckii* Wille.

Skopen (Sandö).

153. *C. subcostatum* Nordst.

Form like my figure in »Ferskvandsalg. fra Østgrønland» p. 12, tab. 1, fig. 4.

Thorshavn (Str.).

154. *C. formosulum* Hoff.

Nordstedt Bornh. Desm. p. 194, tab. 6, fig. 6, 7.

Long. = $45\ \mu$; lat. = $40\ \mu$.

In Plankton from Sörvaagsvatn (Vaagö).

155. *C. Naegelianum* Bréb.

Found by Rostrup (Fær. Fl. p. 90) in »damp peaty soil near Sandegærde« (Str.).

156. *C. crenatum* Ralfs.

Occurs in gatherings from Gliversrejn (Str.); Nolsö; and Trangisvaag (Syd.). Also found by Wille (l. c. p. 26) who further mentions having found:

F. crenæ laterales 2 Nordst. Desm. Spetsb. p. 30, tab. 6, fig. 8.

157. *C. subcrenatum* Hantzsch.

Nordstedt Desm. arct. p. 21, tab. 6, fig. 10.

Found in gatherings from Højvig and Gliversrejn (Str.); and Trangisvaag (Syd.). Wille has also found this species (l. c. p. 27).

158. *C. Nathorstii* Boldt.

A Cosmarium very much like this species was found in a gathering from Gliversrejn (Str.); but as I did not come across any empty cells, I was not able to see the arrangement of the granulation clearly, hence, my determination is open to doubt.

159. *C. cyclicum* Lund. **arcticum* Nordst.

In a collection from Klaksvig (Bordö) gathered by Mr. Feddersen.

160. *C. Kirchneri* Börgs.

Long. = 57μ ; lat. = 45μ ; lat. isthm. = 17μ ; crass. = 33μ .

Skopen (Sandö); Svartafoselv near Højvig (Str.).

The protuberances in the middle of the semicells are sometimes smaller than in my figure (Desm. Bornh. tab. 6, fig. 3).

161. *C. latum* Bréb.

Long. = 108μ ; lat. = 88μ ; crass. = 45μ .

From mountain heights (450 m.) on Bordö.

The form from the Færöes is very much like Bisset's fig. 10 (Roy and Bisset: On Scottish Desm. p. 37, tab. 2).

162. *C. reniforme* Arch.

Rather common. Found in gatherings from Thorshavn and Vestmanhavn (Str.); Sand (Sandö); Trangisvaag (Syd.) and in Plankton from Sörvaagsvatn (Vaagö).

163. *C. Kjellmani* Wille **grande* Wille.

Mentioned by Wille (l. c. p. 27), but with some reservation.

164. *C. Botrytis* (Bory) Menegh.

This species, first found by Rostrup (Fær. Fl. p. 90) is very common in the Færöes. Besides the typical form several others

were found, thus a very large one (long. = $87\ \mu$; lat. = $68\ \mu$) in a glass vessel containing algæ from Nolsö; in the same glass another form was noticed which in vertical view had sides somewhat swollen; in a gathering from Trangisvaag a form was met with which closely agreed with var. *mesoleia* Nordst. (Nordst. et Wiltr. Desm. Ital. p. 27, tab. 12, fig. 2), but differed from it in the broader truncated apices of the semicells. Moreover, in some material from Thorshavn var. *emarginata* Hansg. (Prodrom. Algenfl. fig. 116) was found. The typical form was met with in Plankton from the lake near Ejde (Öst.) and Grothusvatn (Sandö).

165. **C. margaritifera** Menegh.

Höjvig (Str.); Klakken near Klaksvig (Bordö); Sand (Sandö); and in Plankton from the lake near Ejde (Öst.).

165. **C. Brébissonii** Menegh.

Long. = $92\ \mu$; lat. = $67\ \mu$; lat. isthm. = $22\ \mu$; crass. = $48\ \mu$.

Midvaag (Vaagö); Svartafoselv near Höjvig (Str.); Trangisvaag (Syd.).

167. **C. tetraophthalmum** (Kütz.) Menegh.

»Skaarene« on Bordö (375 m.); Skopen and Sand (Sandö).

168. **C. ochthodes** Nordst.

Thorshavn (Str.); Grothusvatn (Sandö); Klaksvig (Bordö). Also found by Wille (l. c. p. 27).

169. **C. annulatum** Nägl. β *elegans* Nordst.

Long. = $46\ \mu$; lat. = $22\ \mu$.

Höjvig and Skjælling (Str.); Nolsö; Klakken near Klaksvig (Bordö).

170. **Arthrodesmus Incus** (Bréb.) Hass.

Amongst Sphagnum in a bog near Höjvig (Str.). Here found with spores exactly like those in Ralfs's figure (l. c. tab. XX, fig. 41).

Lat. spor. sin. acul. = $19\ \mu$; lat. spor. cum acul. = $40\ \mu$.

In a gathering from Klakken near Klaksvig (Bordö) a similar form was found, it only differed in the sides of the semicells being nearly straight and the spines directed somewhat more downwards than in the above-mentioned figure of Ralf.

Long. = $21,6\ \mu$; lat. = $18\ \mu$; long. acul. = $8\ \mu$; lat. isthm. = $5\ \mu$.

Forma. Plate X, fig. 4.

Long. = $14\ \mu$; crass. = $9\ \mu$.

This small form resembles var. *intermedia* Wiltr. (Skand. Desm. p. 15, fig. 6), but differs from it, e. g. in the spines being directed outwards in a straight line with the truncated apices of the semicells; forms closely related to it are f. *isthmiosa* Heimerl (Desm. alp.

p. 603, tab. V, fig. 18) and f. *depauperata* Boldt (Desm. Grönl. tab. 2, fig. 35).

In a gathering, locality not given.

171. **A octocornis** Ehrenb.

Klakken near Klaksvig (Bordö).

172. **Xanthidium armatum** Bréb.

Sandsvatn and Grothusvatn (Sandö); Kirkebökamp near Thorshavn (Str.); Klakken near Klaksvig (Bordö).

173. **X. aculeatum** Ehrenb.

Forma supra prominentiam centralem granulis et aculeis (semper?) ornata. Plate VII, fig. 11.

Long. s. acul. = $67\ \mu$; lat. s. acul. = $62\ \mu$; crass. = $46\ \mu$.

Ralfs's figure 1 c of a cell in lateral view (l. c. tab. XIX) shows over the big central protuberances smaller ones and on the empty cell (fig. 1 b) some granules are arranged in a small circle on the lower semicell under the large central protuberance. Generally in the specimens from the Færøes there was a spine directly over these granules, but it was wanting in some specimens. In Ralfs's figure 1 a the upper semicell has such a spine situated also directly over the granules.

Klakken near Klaksvig (Bordö).

Forma **brevispina**. Plate VII, fig. 12.

Aculeis brevioribus; supra tumorem centralem prominentia minore semilunariiformi prædita; ad *X. Brébissonii* valde accedens.

Long. s. acul. = $67\ \mu$; lat. s. acul. = $62\ \mu$; crass. = $46\ \mu$.

By the rather regularly arranged spines on the cell in front view this variety approaches very near to *X. Brébissonii*. The small often crescent-shaped tubercle over the central protuberance is sometimes continuous sometimes divided into several smaller granules.

Kirkebökamp near Thorshavn (Str.).

174. **X. fasciculatum** Ehrenb.

Ralfs l. c. tab. XIX, fig. 4.

Skopen (Sandö).

175. **X. antilopæum** (Bréb.) Külz.

Kirkebökamp (Str.); Skopen, and rather common in Plankton from Sandsvatn (Sandö).

176. **X. quadricornutum** Roy & Biss.

On Scottish Desm. p. 27, tab. IV, fig. 5.

Forma **longispina** n. f. Plate VII, fig. 13.

Forma færøensis præcipue differt spinis longioribus, latitudine cellulæ majore.

Long. = $57\ \mu$; lat. = $60\ \mu$; long. spin. = $19\ \mu$; lat. isthm. = $17\ \mu$; crass. = $30\ \mu$.

The specimens from the Færøes differ from the Scottish ones in their longer spines, their proportionally greater breadth and shorter length, in the rounded apices of the semicells in front view and the slender form of the semicells in vertical view. Altogether the form from the Færøes approaches rather near to *X. tetracentrotum* Wolle (cfr. W. West and G. West: On some North American Desm. tab. 15, fig. 24); cfr. also *X. hastiferum* Turner β *inevolutum* Nordst.

Found in Plankton from Sörvaagsvatn (Vaagö).

177. **Staurostrum punctulatum** Bréb.

Common in the collections. Wille also found this species (l. c. p. 29).

Var. **Kjellmani** Wille.

In gatherings from Thorshavn (Str.); and a watercourse on Sandö.

178. **S. pygmæum** Bréb.

Occurs in several gatherings from the neighbourhood of Thors-havn (Str.).

179. **S. hexacerum** (Ehrenb.) Wittr.

In Plankton from the large lake near Ejde (Öst.).

Var. **semicirculare** Wittr.

Gott. och Öl. Sötvattensalg. p. 52, tab. IV, fig. 9.

Occurs in a gathering from Nolsö.

180. **S. alternans** Bréb.

In materials from Gliversrejn near Thorshavn (Str.); and Skopen (Sandö).

181. **S. polymorphum** Bréb.

In a gathering from Højvig and Skjælling (Str.); Nolsö; and Trangisvaag (Syd.).

182. **S. hirsutum** (Ehrenb.) Bréb.

In a gathering from Klakken near Klaksvig (Bordö).

183. **S. pilosum** (Nägl.) Arch.

Long. = $40\ \mu$; lat. = $32\ \mu$.

In collections from Gliversrejn (Str.); and Viderejde (Vid.).

184. **S. teliferum** Ralfs.

Seems to be common in the Færøes; it was first found by Rostrup (l. c. p. 90).

185. *S. muricatum* Bréb.

Found in gatherings from Gliversrejn (Str.); Wille also mentions having met with this species (l. c. p. 29).

186. *S. asperum* Bréb.

Long. = 50 μ .

In a gathering from Skopen (Sandö).

187. *S. scabrum* Bréb.

Almost like my figure¹ in Nordst. et Wittr. Exsicc. Nr. 1114 and in Bot. Notiser 1893, p. 196, but differs from it in vertical view in the more broadly rounded angles of the semicell.

Long. = 33 μ ; lat. = 30 μ .

Gliversrejn near Thorshavn (Str.).

188. *S. echinatum* Bréb.

Lat. = 35 μ ; lat. = 32 μ .

Thorshavn (Str.).

189. *S. horametrum* Roy & Biss.

On Scottish Desm. p. 21, tab. 3, fig. 2.

Var. *færoensis* n. v. Plate VII, fig. 14.

A forma typica var. *færoensis* præcipue differt semicellulis a fronte visis late ellipticis incisura mediana fere acutangula, a vertice visæ semicellulæ lateribus late convexis, spinis minus numerosis instructæ.

Long. = 51 μ ; lat. = 40 μ ; lat. isthm. = 18 μ .

It is, however, not without hesitation that I refer this form to this species, as it differs rather considerably from it; but as I have only seen a very few specimens I prefer for the present to regard it as a form belonging to this species.

In a gathering, locality not given.

190. *S. Meriani* Reinsch.

Algenfl. Franken p. 160, tab. 12, fig. 1.

Long. = 46 μ ; lat. = 19 μ .

In a gathering from mountain heights (450 m.) on Bordö.

¹ To this figure I have l. c. attached the following remark: »Figura Ralfsii non bona, utile mihi videtur figuram novam dare«. Now Mr. Schmidle (in »Pite Lappmark und Vesterbotten Süßwasseralgen« p. 54) thinks that he has not only found a form which corresponds to my form but also one which corresponds to that of Ralfs's, and he says: »Forma cum figura in Ralfs l. c., quæ ex clarissimi Boergesenii opinione non est bona plane congruens«. To this statement I beg to remark that I must persist in maintaining that Ralfs's figure is far from good (especially fig. 20a) and that it is impossible to make a reliable determination on the faith of it.

191. *S. Bieneanum* Rab.

Trangisvaag (Syd.).

Var. *spetsbergensis* Nordst.

Desm. arct. p. 33, tab. VIII, fig. 35.

Long. = $38\ \mu$; lat. = $31\ \mu$.

Found in collections from Sandö; and Trangisvaag (Syd.).

I have only seen triangular forms.

192. *S. orbiculare* (Ehrenb.) Ralfs.

In the neighbourhood of Thorshavn (Str.).

193. *S. muticum* Bréb.

In a gathering from Svartafosely near Thorshavn (Str.).

194. *S. dejectum* Bréb.

Found in materials from Gliversrejn near Thorshavn (Str.); Skopen, Sand and in Plankton from Grothusvatn (Sandö).

195. *S. Dickiei* Ralfs.

Brit. Desm. tab. 21, fig. 3.

Gliversrejn (Str.); Skopen (Sandö).

196. *S. megacanthum* Lund. Forma. Plate VIII, fig. 2.

Desm. Suec. p. 61, tab. 4, fig. 1.

Forma *færoensis* a forma typica præcipue differt magnitudine minore, longitudine præ latitudine majore sinu mediano late rotundato, aculeis minoribus.

Long. = $38\ \mu$; lat. cum acul. = $51\ \mu$; long. acul. = $6\ \mu$; lat. isthm. = $9\ \mu$.

Found in Plankton from Sörvaagvatn (Vaagö). I have only seen triangular forms.

197. *S. cuspidatum* Bréb.

Ralfs Brit. Desm. tab. 21, fig. 1.

Gliversrejn near Thorshavn (Str.); Skopen (Sandö).

198. *S. jaculiferum* West. Plate VIII, fig. 1.

Freshwater-Algae of West Ireland p. 172, tab. 22, fig. 14. Of all the forms that are closely related to this species the Færøese specimens seems to be nearest to it. They only differ from it in the spines being somewhat shorter. While West only mentions having seen triangular forms, I have also found 2—4 sided specimens.

Forma 3—4 gona: Long. = $30\ \mu$; lat. sine acul. = $22\ \mu$; lat. isthm. = $8\ \mu$; long. acul. = $22\ \mu$.

Forma 2 gona: Long. = 28—30 μ ; lat. sine acul. = 22 μ ; crass. = 14 μ ; lat. cell. cum acul. = 64 μ ; long. acul. = 22 μ .

In Plankton from Sörvaagsvatn (Vaagö).

It seems to me that *Arthrodesmus longicornis* Roy (Roy & Biss.: On Scottish Desmidiæ p. 28 (sep.), tab. 4, fig. 1) must undoubtedly be referred to my two-sided »*Arthrodesmus*« form, it only differs from it in the spines being less diverging; and also Borge in a short paper: »Süßwasseralgen aus der Insel Mull« (in Bot. Notiser 1897 p. 213) not only mentions forms like Roy's figure, but also reports having found cells with more diverging spines (cfr. fig. 5 a) which quite correspond to my figure. In the same paper Borge gives a figure of a form of *Staurastrum megacanthum* with long spines; but it is easily distinguished from the species in question by its cells which are far broader.

199. **S. lunatum** Ralfs.

A form like Borge's figure (Algologiska Notiser 4, p. 213, fig. 8) occurs in Plankton from Sörvaagsvatn (Vaagö); and lake near Ejde (Öst.). A form with considerably shorter spines was found in a gathering of algæ from Skopen (Sandö).

200. **S. cristatum** (Nägl.) Arch.

Long. = 30 μ = lat.

Gliversrejn near Thorshavn (Str.).

201. **S. Avicula** Bréb.

Grothusvatn (Sandö).

202. **S. denticulatum** (Nägl.) Arch.

In Plankton from Sörvaagsvatn (Vaagö).

203. **S. rostellum** Roy & Biss. Plate VII, fig. 15.

On Scott. Desm. p. 24, tab. IV, fig. 3.

The specimens found by me in the Færøes differ at first sight with their many bifurcate spines considerably from Roy & Bisset's figure. But on regarding their figure more closely one not only discovers here and there in it a bifurcate spine, but the two downward directed spines at the angles of their figure in front view also have smaller ones on them; therefore I do not hesitate to refer my form to this species even if it may be that it is also very like the below-mentioned form of *St. spongiosum*.

Long. cum acul. = 32 μ ; lat. = 27 μ ; lat. istm. = 11 μ .

In gatherings from Gliversrejn and Skjælling (Str.).

204. *S. sexcostatum* Bréb.

Long. = 41 μ ; lat. = 35 μ ; lat. isthm. = 17 μ .

Gliversrejn near Thorshavn (Str.).

205. *S. spongiosum* Bréb. var. *perbifidum* West.

The specimens from the Færøes are very much like Lütke-müller's form (Desm. Attersees, p. 29, tab. 9, fig. 15).

Long. = 54 μ ; lat. = 43 μ ; lat. isthm. = 14 μ .

Gliversrejn near Thorshavn (Str.).

206. *S. acarides* Nordst.

Desm. Spetsb. p. 40, tab. VII, fig. 26.

The specimens from the Færøes are quite like Nordstedt's figure (Desm. Spetsb. p. 40, tab. 7, fig. 26).

They occurred in great abundance in a gathering from mountain heights (450 m.) on Bordö.

207. *S. oxyacantha* f. *torta* n. f. Plate VIII, fig. 3.

Cellululæ a vertice visæ radiis evidenter tortis.

Long. = 30 μ ; lat. = 33 μ .

Klakken near Klaksvig (Bordö).

208. *S. paradoxum* Meyen.

In Plankton from Sörvaagsvatn (Vaagö); and lake near Ejde (Öst.).

209. *S. crenulatum* (Nägl.) Delp.

Desm. subalp. tab. 12, fig. 1—11.

Long. = 40 μ ; lat. = μ ; lat. isthm. = 16 μ .

Found in Plankton from Sörvaagsvatn (Vaagö).

210. *S. Sebaldi* Reinsch.

The specimens from the Færøes are rather like my form from Greenland (Ferskvandsalg. fra Østgrøn. p. 30, tab. 2, fig. 31), the arms or processes of the semicell seen in vertical view, however, are somewhat longer and thinner and thereby it approaches var. *brasiliensis* Börgs. (Desm. Brasil. p. 47, tab. 5, fig. 51).

Long. = 54 μ ; lat. = 64 μ ; lat. isthm. = 14 μ .

In a gathering from Sand (Sandö).

211. *S. Arachne* Ralfs.

Found by Rostrup (Fær. Fl. p. 90).

212. *S. tetracerum* Kütz.

Already found by Rostrup (Fær. Fl. p. 90). I have seen this species in gatherings from Thorshavn (Str.); Klakken near Klaksvig (Bordö); Skopen and Sand (Sandö).

213. *S. Pseudosebaldi* Wille. Plate VII, fig. 17.

Norges Ferskvandsalg. p. 45, tab. 2, fig. 30.

Forma fieroënsis præcipue differt radiis tenuioribus et longioribus; habitu cellulae graciliore.

Long. = 50 μ ; lat. = 67 μ ; lat. isthm. = 13 μ .

Found in a collection of algae from Svartafoselv near Thorshavn (Str.).

The Færøese form differs from the above-named as it seems rather schematic figure given by Wille mainly in its more slender build; it resembles very much Wolle's figures 8 and 9 in Desm. U. S. tab. 46.

214. *S. furcigerum* Bréb.

Skopen (Sandö).

215. *S. brachiatum* Ralfs.

Klakken by Klaksvig (Bordö).

216. *S. inconspicuum* Nordst.

Norges Desm. p. 26, tab. 1, fig. 11.

Of this species a few specimens were found which are distinguished by their forming short filaments; these showed a regular twist as is commonly seen in the filamentous Desmids.

Long. = 20 μ ; lat. cum brachiis = 24; lat. isthm. = 9,5 μ .

Svartafoselv near Thorshavn (Str.).

Order IX. ZYGNEACEÆ.

217. *Zygnema stellinum* (Vauch.) Ag.

The form observed corresponded best with the variety *Vaucherii* (Ag.) Kirchn.; it was on the whole smaller than the form mentioned by me in »Ferskvandsalg. fra Østgrønland» p. 33, fig. 1. The spores are at first brownish and then blackish-blue (according to materials preserved in spirit). The scrobiculations in the spore-membrane were first visible when the spores were crushed. This form has further confirmed me in my opinion (cfr. l. c. p. 33) that *Z. peliosporum* Wittr. can hardly be anything more than a variety belonging to this species.

Lat. cell. veget. = 27 μ ; lat. sp. = 30 μ .

In a gathering from Frodebø near Tværaa (Syd.).

218. *Z. lejospermum* De Bary.

I have only found this species with immature spores, so I am not quite sure as to the correctness of the determination.

Lat. cell. veget. = $22\ \mu$; lat. sp. = $25\ \mu$.

In collections from Trangisvaag (Syd.); and Bosdalafof (Vaagö).

In Hydrophyt. pp. 174—5 Lyngbye mentions having met with *Zyguema bipunctatum* and *Z. pectinatum* in the Færöes. Of the former only one specimen is to be found in Lyngbye's Herbarium in the Botanical Museum, Copenhagen, and it is gathered »in rivulo ad Thorshavn« and named by Lyngbye var. *compactum*. The material is sterile. The cells have very thick walls (crass. parietis = $7\ \mu$; lat. fil. = $48\ \mu$). They possess rather numerous rhizoids. This has also been noticed by Lyngbye as he has labelled it as follows: — »Fila fragilia, albida, omnino ad modum ejus exemplaris, quod ad Græsmarken prope Hoffmannsgave lectum, delineavi. Hoctamen interdum parvos curvosque emittet ramulos, qui tamen sine dubio sunt exemplaria copulata.« Rostrup (Fær. Fl. p. 89) thinks that it resembles *Z. cruciatum* and I am also inclined to think so. Wille (l. c. pp. 29—30), on the other hand, is of opinion that it agrees with *Z. stellinum*; and he is so confident of the fact, that on the faith of it, and on that of some sterile filaments found in Mr. Patursson's collection, he does not hesitate to include it in his list. I, for one, am of opinion that it is impossible to determine sterile *Zygnemaceæ* with certainty, which is also pointed out by De Bary (Conj. p. 78).

The material of Lyngbye's *Z. pectinatum* is also sterile and therefore indeterminable; Wille thinks that it is identical with *Z. cruciatum*.

219. *Zygonium ericetorum* Kütz.

This species I have found in gatherings from Gliversrejn near Thorshavn (Str.); Nolsö; and Midvaag (Vaagö).

Lyngbye's *Conferva ericetorum* (Hydrophyt. p. 140) is probably identical with this species, but this cannot be proved for certain as the material in Lyngbye's Herbarium in Copenhagen is sterile. Wille (l. c. p. 30) also mentions having found this species.

220. *Spirogyra catenæformis* (Hass.) Kütz.

Petil, Spirog. p. 17, tab. III, fig. 9—12.

Lat. cell. veget. = $23\ \mu$; lat. sp. = $30\ \mu$.

— — fruct. = $36\ \mu$; long. sp. = 70 — $80\ \mu$.

Frødebö near Trangisvaag (Syd.).

221. *S. affinis* (Hass.) Petil.

Spirog. p. 18, fig. 13—14.

The spores are often nearly spherical.

Frodebö near Trangisvaag (Syd.).

222. *S. inflata* (Vauch.) Rabenh.

Lat. cell. veget. = 17–20 μ ; lat. sp. = 32–35 μ .

— — fruct. = 47 μ ; long. sp. = 60 μ .

In gatherings from Trangisvaag (Syd.); and Kunö.

223. *S. quadrata* (Hass.) Petit.

Lat. cell. veget. = 26 μ ; lat. cell. fruct. = 48 μ .

Thorshavn (Str.).

Wille (l. c. p. 29) is probably right in maintaining that the *Zygnema nitida* (Hydrophyt. p. 172) reported by Lyngbye from the Færøes is *Spirogyra nitida*. However, as no Færøese material of this species is to be found in Lyngbye's Herbarium this cannot be proved for certain. Of *Zygnema quinium* also reported by Lyngbye as occurring in the Færøes (Hydrophyt. p. 173) no Færøese specimen is to be found either. A *Zygnema quinium*, not localized, and which might consequently be from the Færøes, may be probably referred to *Sp. porticalis* (Müll.) Cleve, and Wille (l. c. p. 29) is also of opinion that it ought to be placed under this species.

Sterile filament of *Zygnema* as well as of *Spirogyra*, of different appearance and size, were often found in the considerable material which I had for examination. Therefore it is very probable that many more species occur in the Færøes than are recorded in this list.

Order X. MESOCARPACEÆ.

224. *Mougeotia scalaris* Hass.

Lat. cell. = 20–33 μ ; lat. spor. = 33 μ .

Gliversrejn near Thorshavn (Str.).

Only immature spores were found, but the form of the conjugating cells and of the spores agree fairly well with Hassal's figure 7, tab. 42 in Brit. Freshw. Alg.

225. *M. nummuloides* Hass.

De Bary Conj. tab. VIII, fig. 9–10.

Lat. cell. = 11 μ ; lat. sp. = 35 μ .

Trangisvaag (Syd.).

In a gathering from Frodebö (Syd.) a *Mougeotia* occurred which possibly may be *M. ovalis* (Hass.) Nordst. (lat. cell. = 11 μ ; lat. sp. = 27 μ ; long. sp. = 35 μ), but it was found in so small a quantity that this cannot be fully proved.

226. ? *M. parvula* Hass.

Lat. cell. = 10 μ ; lat. sp. = 23 μ .

As the spores were not ripe and the material, moreover, had been dried, I am not quite sure as to the correctness of the determination. It occurred as a green covering on turfy soil near Trangisvaag (Syd.).

227. *M. viridis* (Kütz.) Wittr.

De Bary Conj. tab. 2, fig. 17—18.

Lat. cell. = $7\ \mu$; lat. sp. = $22\ \mu$.

Found in a gathering from a height of 200 m. near Trangisvaag (Syd.).

In Hydrophyt. p. 170 Lyngbye mentions *Zygnema genuflexum* as occurring »item in rivulis Færoensibus«. Wille (l.c. p. 30) thinks that it must be *Mougeotia genuflexum* (Dillw.) Ag.; but this cannot be fully proved as the material in Lyngbye's Herbarium is sterile; the thickness of the filament is $35\text{--}40\ \mu$, so that agrees fairly well.

The *Conferva alpina* mentioned by Lyngbye (Hydrophyt. p. 139), according to the only specimen from Kirkebøfjæld found in Lyngbye's Herbarium, is a mixture of several algæ, e.g. *Zygnema*, *Conferva*, *Stigonema mamillosum*, but mostly of a sterile *Mougeotia* the cells of which are about $18\ \mu$ thick.

Order XI. VOLVOCACEÆ.

228. *Gonium pectorale* Müll.

Miss E. Hallas has very kindly told me that she saw a solitary specimen in a collection of *Oedogonium* from »Gjov« near Tværaa (Syd.).

228. *Pandorina Morum* (Müll.) Bory.

In a gathering of algæ from Grothusvatn (Sandö); and in Plankton from Sörvaagsvatn (Vaagö) and the lake near Ejde (Öst.).

230. *Eudorina elegans* Ehrenb.

In Plankton from the lake near Ejde (Öst.).

Order XII. TETRASPORACEÆ.

231. *Apiocystis Brauniana* Nägl.

In a gathering from the lake in Kvalbø Ejde (Syd.).

232. *Tetraspora lacustris* Lemm.

Found in Plankton from Sörvaagsvatn (Vaagö). The determination is due to Mr. Lemmermann.

The *Palmella hyalina* mentioned by Lyngbye (Hydrophyt. p. 204, tab. 69) is probably, judging from a specimen in his herbarium which is however very shrunk, a *Tetraspora*. According to Lyngbye's description we might suppose it to be *T. cylindrica*, but both

his figure and the specimen in his herbarium prove that it cannot possibly be this species. Lyngbye has also labelled it: — »*Massa deformis, viridis, gelatinosa*«.

233. ***Palmodactylon simplex*** Nägl.

Wille (l. c. p. 24) mentions this species.

234. ***Botryococcus Braunii*** Kütz.

Found in Plankton from Sörvaagsvatn (Vaagö); and the lake near Ejde (Öst.).

235. ***Dictyosphærium Ehrenbergianum*** Nägl.

In a gathering from Trangisvaag (Syd.).

Order XIII. PLEUROCOCCACEÆ.

236. ***Palmella mucosa*** Kütz.

Nolsö; Trangisvaag (Syd.).

237. ***P. uvæformis*** Kütz.

I mention it here under this name, but it is doubtless a phase of development of *Draparnaldia glomerata*.

Gliversrejn near Thorshavn (Str.).

Lyngbye's *Palmella botryoides* (Hydrophyt. p. 205) is a Lichen.

238. ***Glæocystis vesiculosa*** Nägl.

In different gatherings from Thorshavn (Str.); Wille (l. c. p. 24) also reports having found this species in gatherings from the Færøes.

239. ***G. Gigas*** (Kütz.) Lagerh.

Nolsö; in Plankton from the lake near Ejde (Öst.).

240. ***Pleurococcus vulgaris*** (Grev.) Menegh.

Is very commonly seen on houses and »Kælde« (a kind of outhouse) in the form of a covering, often attaining to the thickness of a millimetre or more. This species, as also maintained by Wille (l. c. p. 25), is undoubtedly identical with the *Byssus botryoides* mentioned by Landt¹ as follows: »*Byssus botryoides* — in Danish: grape-like crust of dust — is the green powder, which occurs on wooden walls of houses on the side that turns from the sun«.

241. ***Acanthococcus hirtus*** (Reinsch.) Lagerh.

Found in a gathering from Gliversrejn (Str.); and in some dried material from »Gjov« near Vaag (Syd.).

¹ »*Byssus botryoides*, paa dansk: Drucartet Stovskorpe er det grønne Pulver, der sætter sig paa de med Brædder beklædte Husvægge paa den Side, som vender fra Solen«. (Forsøg til en Beskrivelse over Færøerne p. 233).

242. *A. aciculiferus* Lagerh.Lat. s. acul. = 25 μ .

Svartafoselv near Højvig (Str.).

243. *Oocystis solitaria* Willr.

Often found in the collections.

244. *Nephrocytium Naegelii* Grun.Lat. = 16 μ .

Thorshavn (Str.); Skopen and Grothusvatn (Sandö).

245. *Raphidium polymorphum* Fres.

Rather common; Rostrup (Fær. Fl. p. 89) mentions having met with it amongst Sphagnum on Strömö.

246. *Scenedesmus bijugatus* (Turp.) Kütz.

Thorshavn (Str.); and Tværaa (Syd.). In Plankton from the large lake near Ejde (Öst.). Has been already found by Rostrup (Fær. Fl. p. 90).

247. *S. denticulatus* Lagerh.Stockh. Pediastr. p. 61, tab. 2, fig. 13—16. Cfr. var. *lineatus* West: Algæ of West Ireland p. 193, tab. 18, fig. 7.

The specimens from the Færöes are a little larger than indicated by Lagerheim.

Long. cell. = 19 μ ; lat. = 8 μ .

Gliversrejn near Thorshavn (Str.).

248. *S. quadricauda* (Turp.) Bréb.

Common in the collections. Also found in Plankton from the lake near Ejde (Öst.); and Sandsvatn (Sandö).

Var. *horrida* Kirch.

Viderejde (Vid.).

249. *S. obliquus* (Turp.) Kütz.

Rather common in the collections. In Plankton from Sandsvatn (Sandö).

250. *Polyedrium enorme* (Ralfs) De Bary.

Viderejde (Vid.); in Plankton from the large lake near Ejde (Öst.).

251. *P. minimum* A. Br.

Reinsch Fam. Polyedriarum in Notarisia 1888, p. 499.

Lat. = 8 μ .

Very common in a gathering of algæ from Skopen (Sandö).

252. *P. tetraetricum* Nägl. f. *minor*.

Reinsch l. c. p. 505.

Lat. = 27 μ .

In Plankton from Grothusvatn (Sandö).

253. **Eremosphæra viridis** De Bary.

A few specimens occurred in a collection from Midvaag (Vaagö).

Order XIV. PROTOCOCCACEÆ.

254. **Characium minutum** A. Br. var. **disculiferum** Wittr.

Wittr. et Nordst. Alg. exsicc. Nr. 459.

On some filaments of algæ in a collection from the Færøes.

Order XV. HYDRODICTYACEÆ.

255. **Pediastrum Boryanum** (Turp.) Menegh.

Mentioned by Rostrup (Fær. Fl. p. 90) and re-discovered in several places; found also in Plankton from the large lake near Ejde (Öst.).

Var. **granulata** (Kütz.) A. Br.

Raciborski Pediastr. p. 14.

In a gathering from Viderejde (Vid.); and in Plankton from Sörvaagsvatn (Vaagö); lake near Ejde (Öst.); Sandvatn (Sandö); and the lake in Vaags Ejde (Syd.).

Var. **longicorne** Reinsch forma **granulata**.

Raciborski l. c. p. 14, tab. II, fig. 13.

In Plankton from Sörvaagsvatn (Vaagö); and lake near Ejde (Öst.).

256. **P. angulosum** (Ehrenb.) Menegh.

Var. **araneosum** Rac.

Raciborski l. c. p. 18, tab. II, fig. 19 et 20.

Mixed together with other algæ in a gathering from Skopen (Sandö); and in Plankton from Sörvaagsvatn (Vaagö).

257. **P. Duplex** Meyen.

In a collection from Sandvatn (Sandö); and in Plankton from the same locality. Already mentioned by Rostrup (Fær. Fl. p. 90) as *P. pertusum* Kütz.

Var. **clathrata** A. Br.

In Plankton from Grothusvatn (Sandö); and Sörvaagsvatn (Vaagö).

Var. **aspera** A. Br.

In Plankton from Grothusvatn (Sandö).

Var. **brachyloba** A. Br.

In Plankton from Grothusvatn (Sandö).

258. *P. muticum* Kütz.

Var. *longicorne* Rac.

l. c. tab. II, fig. 18, 19.

From a watercourse on Kirkebökamp near Thorshavn (Str.); and in Plankton from Sörvaagsvatn (Vaagö).

259. *P. Tetras* (Ehrenb.) Ralfs.

Lagerh. *Pediastr.* p. 54.

Kvalbö Ejde (Syd.).

260. *Cœlastrum sphæricum* Nägl.

In Plankton from Sandsvatn (Sandö).

261. *C. cubicum* Nägl.

Grothusvatn (Sandö).

262. *C. microporum* Nägl.

Viderejde (Vid.); Skopen and Grothusvatn (Sandö); in Plankton from the large lake near Ejde (Öst.).

Order XVI. ULVACEÆ.

263. *Prasiola crispa* (Lightf.) Menegh. Plate IX, fig. 2.

Is very common especially on damp grass roofs where it occurs in large green curly patches. It has been already found by Lyngbye (*Hydrophyt.* p. 32, tab. 6), his *Ulva terrestris*, as the specimens in his herbarium show, is this species. As is well-known, *Hormidium murale* (Ag.) Kütz. is a phase of development of this species and also in the material from Thorshavn specimens were found in different stages of development, from *Hormidium murale* to fully developed *Prasiola*. I have given a figure of such a young *Prasiola* (Plate IX, fig. 2). The base consists of some rhizoid-like branches, containing thick-walled cells, the branches more or less grown together so as to form a small disc with which the plant is attached. Just above this »attachment-disc« follows a short *Hormidium*-like part formed of a single row of cells; after a slight constriction, the filament expands inconsiderably, now consisting of one stratum of cells, this slightly broader part — as yet quite a narrow band — which is of some length and bears rhizoids here and there, finally broadens and takes the character of *Prasiola*¹.

Hormidium murale has also been found by Lyngbye (*Hydrophyt.* p. 95) as the *Oscillatoria muralis* mentioned by him, judging

¹ Cfr. Imhäuser: »Entwicklungsgeschichte und Formenkreis von *Prasiola*«. (Flora 47. 1889).

from the specimens in his herbarium, is identical with this species. Gay (Algues vertes p. 86), who has examined the original specimens in Thuret's Herbarium, has also determined it to be this species.

264. *P. velutina* (Lyngb.) Wille.

Lyngbye (Hydrophyt. p. 68) who first discovered and described this species calls it *Scytosiphon velutinus* Lyngb. With regard to its habitat he writes: »Habitat ad saxa rivuli rapidissimi declivia prope littus Ære Æsterøe Færoense«. Afterwards Wille (l. c. p. 32) found it in the material which he had for examination and which is probably collected in the neighbourhood of Kirkebö (Str.).

265. *Enteromorpha compressa* (L.) Grev. Plate IX, figs. 3 and 4.

In Hydrophytologia p. 64 Lyngbye reports a freshwater example of *Enteromorpha* from the Færøes under the name of *Scytosiphon compressus* (L.) Lyngb. β *crispatus*, and with regard to its habitat he writes: »Etiam in rivulo subalpino inter Welbestad et Kirkeböe Færoæ; et ad littora Færoensia copiosissime«. I mention this here because, as I shall show in the following, Lyngbye confounded two different species under this name. How far this is the reason why Agardh in »Till Algernes Systematik VI, Ulvaceæ« refers Lyngbye's *Scytonema compressus* β *crispatus* to two different species, viz. *E. prolifera* (Müll.) p. 129 and *E. percursa* (C. Ag.) f. *ramosa* p. 147 and in both instances inserts a! after Lyngbye's figure l. c. tab. 15 B fig. 1—2, I cannot tell; Agardh does not mention having had original specimens for examination.

Wille (l. c. p. 57) is of opinion that Lyngbye undoubtedly has confounded two species, and he adds »as it is not possible that a saltwater species of *Enteromorpha* can also occur in a subalpine stream«. He thinks that the freshwater form must be a *Prasiola fluviatilis* (Somf.) Aresch.

To this Simmons (Algologiska Notitser in Bot. Notitser 1898, p. 27) remarks that Lyngbye's figure can hardly be made to fit *Prasiola fluviatilis* and agrees with Agardh in thinking that the species in question is an *Enteromorpha prolifera*.

Fortunately in Lyngbye's Herbarium both fresh and saltwater specimens are to be found. With regard to the latter I shall here shortly mention that it can very well be referred to *Enteromorpha prolifera*. Not quite so with the freshwater specimen. The example found in the Herbarium of the Botanical Museum, Copenhagen,

Lyngbye has labelled¹: »in a clear running stream far up on the hills between Velbestad and Kirkebøe. Some of the filaments as thick as the feather of a sparrow, wavy, most of them finer and here and there somewhat branched or proliferous. NB. Please notice the habitat: in an algæ-stream, in clear running water«. This citation shows Lyngbye was astonished to find a seawater alga at that height and in freshwater.

On closer investigation the freshwater specimen proves to be essentially different from the marine one. The two specimens correspond outwardly in being more or less ramified or proliferous, but while the marine specimen has the cells arranged in distinct longitudinal rows even in the thicker branches, the cells of the freshwater specimen are without any arrangement whatever, not only in the thicker branches, but also in the thinner ones. This fact in connection with the thickness of the cell-membrane, the form and size of the cells and of the chromatophors and the more or less strong ramification being the most important characters which help to distinguish the different species (cfr. Ahlner, Agardh, Kjellman, Reinhold and others) prove that Lyngbye's *Enteromorpha* cannot possibly be *E. prolifera*. On the contrary I give it as my opinion relying chiefly on Reinhold's paper on the genus *Enteromorpha* (in *Die Chlorophyceen der Kieler Föhrde* p. 113) that it must be a form of *Enteromorpha compressa* (L.) Grev. To the characters already mentioned I may add that the thallus, the thickness of which rarely exceeds 1—2 millimetres is sometimes branchless and sometimes has branches or proliferations here and there. It is sometimes curly as in Plate IX fig. 3 b. The branches are generally thinner than the main filament and are often more or less prolific. The cells are roundish-polygonal of very varying form and without any arrangement whatever (fig. 3 d); they are 4—8 μ broad. A transverse section (fig. 3 c) of the thallus shows that the outer and inner walls of the cells have all almost the same thickness; the thickness of the cell stratum varies with an average of about 13 μ .

In a larger stream on Fuglø at a height of 200 m. Ostenfeld collected a small *Enteromorpha* which corresponds very closely to Lyngbye's specimen or at least it only shows smaller variations.

¹ »i en rindende, klar Bæk højt oppe paa Fjeldet mellem Velbestad og Kirkebøe. Nogle Traade saa tykke som en Spurvefjer, bølgede, de fleste finere hist og her grenede eller proliferer. NB. Mærk at den fandtes i saadan en Algebæk i det klart rindende Vand«.

It is sometimes proportionately richly branched, sometimes quite branchless (Plate IX, fig. 4). The cells are roundish-polygonal and without any arrangement whatever (fig. 4b); they are apparently a little smaller (lat. = 6μ). The inner wall often seems to be thicker than the outer wall (fig. 4c), it has been known to attain to a thickness of 3μ . The entire thickness of the wall is about 12μ .

266. *E. micrococca* Kütz. forma *subsalsa* Kjellm. Plate VIII, fig. 6.

Furthermore, in the year 1895 I found at a height of 200—300 m. in a smaller stream on Gliversrejn near Thorshavn a little, elegant, richly branched *Enteromorpha* which appears to me to be very near to *Enteromorpha micrococca* Kütz. forma *subsalsa* Kjellm. (The Algæ of the Arctic sea, p. 292, tab. 31, fig. 1—3).

Though the specimens from the Færøes differ materially in one respect from this form as the transverse view shows (Plate VIII, fig. 6d) the outer wall being often somewhat thicker than the inner wall, while with regard to Kjellman's form the inner wall is considerably thicker than the outer wall, and this is also generally the case with *E. micrococca* Kütz. I have, however, among my material of marine *E. micrococca*, found forms undoubtedly related to this, of which sometimes the inner wall and sometimes the outer was the thicker, while sometimes both walls were of similar thickness. I do not therefore think that one ought to attach too much importance to this character. But with this exception my form seems to correspond fairly well with that of Kjellman.

As the figure shows (fig. 6a) it is very richly branched and prolific. The cells are small and of a very irregular form, sometimes roundish, sometimes polygonal. The outer wall sometimes attains to a thickness of 3μ ; the thickness of the whole thallus varies, with an average of about 11μ .

A related form appears to be *E. ramosa* Boye (Algevegetationen ved Norges Vestkyst p. 43, tab. 1). Its outer wall is also the thicker, much more so than in my form (lat. = $6-8\mu$), but especially in the thinner branches of this species the cells are ranged in fairly distinct rows.

Order XVII. ULOTHRICEÆ.

267. *Ulothrix zonata* (Web. et Mohr) Kütz.

Seems to be fairly common in the Færøes as also Lyngbye points out in *Hydrophyt.* p. 136; he mentions it as *Conferva zonata*. »Habitat in lacubus insularum Færoensium saxis adfixa, sat frequens.«

Var. **valida** (Nägl.) Rabenh.

Found in gatherings from Trangisvaag (Syd.); and the large lake near Ejde (Öst.).

268. **U. subtilis** Kütz. forma **typica** Kirehn.

In collections from Nolsö; and Trangisvaag (Syd.); also observed by Wille (l. c. p. 57).

269. **U. radicans** Kütz.

Found by Wille (l. c. p. 57).

270. **Binuclearia tatrana** Wittr.

Gliversrejn near Thorshavn (Str.); Nolsö; Grothusvatn (Sandö); Wille has also found this species (l. c. p. 57).

271. **Microspora amœna** (Kütz.) Rabenh.

Lat. = 22 μ .

Hvidenæs and Gliversrejn near Thorshavn (Str.); Trangisvaag (Syd.).

272. **M. rufescens** (Kütz.) Lagerh.

Lat. = 13 μ .

In a small lake near Thorshavn (Str.).

273. **M. stagnorum** (Kütz.) Lagerh.

Found here and there in the materials examined, also found by Wille (l. c. p. 57), who, besides, is of opinion that Lyngbye's *Conferva fugacissima* Roth. γ . *oscillatoroides* (Hydrophyt. p. 137) must be identical with this species. This cannot, however, be proved as the only specimen to be found in Lyngbye's Herbarium under this name was collected »in fossis prope Lommen Maj 1811« — consequently not in the Færöes.

Order XVIII. CONFERVACEÆ.¹

274. **Conferva bombycina** (Ag.) Wille.

Very common in lakes and streams in the Færöes.

275. **C. minor** (Wille) Klebs.

Found in collections from Midvaag (Vaagö); Nolsö; and Sandö. Both this and the above-mentioned have also been observed by Wille (l. c. p. 57).

276. **Ophiocytium majus** Nägl.

Pool on Nolsö.

277. **O. cochleare** (Eichw.) A. Br.

Found by Rostrup (Fær. Fl. p. 90); I have seen it in collections from Sandö; and Viderejde (Vid.).

¹ Cfr. K. Bohlin's important work: Studier öfver Alggruppen *Confervales* *Borziæ*.

β. *bicuspidatum* Borge.

In gatherings from Thorshavn and Højvig (Str.).

278. *O. parvulum* Rabenh.

From Thorshavn (Str.); also found by Wille (l. c. p. 24).

279. *O. capitatum* Wolle var. *longispinum* (Moeb.) Lemm.

In Plankton from Sörvaagsvatn (Vaagö). Determined by Mr. Lemmermann.

Order XIX. CHÆTOPHORACEÆ.

280. *Chætophora elegans* (Roth.) Ag.

Found by Lyngbye (Hydrophyt. p. 192) »Etiam in lacu Vandsdalsvatn in rupe Qvalbøefjeld trans Karagjov Suderøe Færoæ, Fontinali antipyrreticæ adhærescens«, i. e. at the same place as »*Conferva nana*« (see above p. 207) and this species was also seen mixed together with it. I have found specimens from Velbestad (Str.).

281. *Stigeoclonium tenue* Rabenh.

Found in gatherings from Gliversrejn near Thorshavn (Str.); and Næs (Öst.). Wille (l. c. p. 58) also mentions having found it, and as Lyngbye's fig. 2 A in Hydrophyt. tab. 52 of *Conferva nana* somewhat resembles a *Stigeoclonium*, he is of opinion that Lyngbye must also have found it, but strangely enough this species does not occur among the specimens of *Conferva nana* Lyng. in Lyngbye's Herbarium, Copenhagen.

282. *Draparnaldia glomerata* Ag.

Found by Lyngbye (Hydrophyt. p. 189) »Ad saxa rivulorum Færoensium, ut ad Velbestad, et Qvalbøe Suderøe«. I have seen specimens from a watercourse near Thorshavn and Gliversrejn (Str.); Famienvatn (Syd.).

283. *Microthamnion Kützingianum* Nägl. var. *strictissima* (Rabenh.) Hansg.

Amongst some other algæ in a gathering from Nolsö.

284. *Trentepohlia aurea* (L.) Mart.

This species seems to be rather common on damp rocks, in ravines and such like places. It has been already mentioned by Lyngbye (Hydrophyt. p. 134) under the name of *Ectocarpus aureus* »ad rupes, fluviiis rivulisque contiguas, Norvegiæ et Færoæ, sat frequens«. In Lyngbye's Herbarium two specimens are to be found, one labelled »in fissura rupis ad Waag, Suderøe«, and another »in rupe maritima prope Thorshavn«.

I have seen specimens from ravines near Vestmanhavn (Str.); Tværaa and on rocks near Kvalbö (Syd.).

Rostrup (Fær. Fl. p. 88) points out that Hornemann in Dansk økonomisk Plantelære p. 636 mentions that Lyngbye found *Trentepohlia Jolithus* (L.) Wallr. in the Færøes. But as Lyngbye does not mention it in Hydrophytologia and as no specimens from the Færøes are to be found in Lyngbye's Herbarium and as furthermore this species was not found during the researches of the later years it cannot with any certainty be added to the list of the algæ from the Færøes as Wille (l. c. p. 58) has done, though it is very probable that this species may occur in the Færøes it having been found in Iceland.

285. *Chætosphæridium Pringsheimii* Kleb. forma conferta Kleb.
Plate VIII, fig. 5.

To this species I think I may refer a small, interesting alga which I found on some decayed *Carex* straws gathered from the large lake near Sand (Sandö).

It forms rather large discs consisting of roundish, sometimes somewhat angular cells, the angles being formed by the cells pressing against each other, all the cells have on their upturned side a long, unjointed hair, which is enclosed in a sheath at the bottom. Sometimes only the sheath has been found, the hair had probably been broken off. Spiral hair did not occur (cfr. Klebahn in Pringsheim's Jahrbücher tome 24, tab. 4, fig. 14). Mucilage has never been found and I have not seen the alga growing together with *Coleochaete*. The processes connecting the cells figured and fully described by Klebahn, were usually wanting or very little developed; yet a few isolated examples, loosely built, with less compact cells, were sometimes found with well developed connecting processes (fig. 5b) which however did not attain to the size given by Klebahn as that of the connecting processes of the typical *Chætosperidium Pringsheimii*. Moreover, the contents and division of the cells judging from the material preserved in spirit answer exactly to Klebahn's description of »forma conferta«.

Order XX. OEDOGONIACEÆ.¹

286. *Oedogonium cryptoporum* Wittr.

Frodebö (Syd.).

287. *O. capitellatum* Wittr.

Skopen (Sandö).

288. *O. psægmatosporum* Nordst.

Grothusvatn (Sandö).

¹ The determination of the *Oedogoniaceæ* I owe to Miss E. Hallas.

289. *O. vernale* (Hass.) Wittr.

The lake near Ejde (Öst.); Sand (Sandö).

290. *O. crispum* (Hass.) Wittr.

Kvalbøejde (Syd.).

291. *O. platygynum* Wittr.

Grothusvatn (Sandö).

292. *O. Rothii* (Le Cl.) Pringsh.

Sörvaagsvatn (Vaagö).

293. *O. decipiens* Wittr.

»Gjov« at Tværaa (Syd.).

294. *O. rugulosum* Nordst.

Frodebö (Syd.).

295. *O. Areschougii* Wittr.

»Gjov« at Tværaa (Syd.).

296. *O. irregulare* Wittr.

The large lake near Ejde (Öst.).

297. *O. macrandrum* Wittr.

Grothusvatn (Sandö); Frodebö, Kvalbøejde and »Gjov« at Tværaa (Syd.).

298. *O. rufescens* Wittr.

Frodebö (Syd.).

299. *Bulbochæte intermedia* De Bary.

Sand (Sandö); Sörvaagsvatn (Vaagö).

300. *B. crenulata* Pringsh.

Grothusvatn (Sandö).

301. *B. mirabilis* Wittr.

Grothusvatn (Sandö); Kvalbøejde (Syd.).

302. *B. setigera* (Roth) Ag.

Mentioned by Rostrup (Fær. Fl. p. 88) as follows: »Vaagö on *Fontinalis antipyretica*. A watercourse near Thorshavn on *Hypnum scorpioides*«.

303. *B. megastoma* Wittr. et Lund.

Sand (Sandö).

304. *B. pygmæa* (Pringsh.) Wittr.

Grothusvatn (Sandö).

305. *B. reticulata* Nordst.

Much smaller than usual.

Sörvaagsvatn (Vaagö).

306. *B. rectangularis* Wittr.

Frødebø (Syd.); Sand and Grothusvatn (Sandø).

307. *B. gracilis* Pringsh.

Grothusvatn (Sandø).

Order XXI. COLEOCHÆTACEÆ.

308. *Coleochæte scutata* Bréb.

Found growing on different fragments of plants in gatherings from Grothusvatn (Sandø); and the lake in Kvalbø Ejde (Syd.).

309. *C. Nitellearum* Jost.

On *Nitella opaca* from different localities. Dr. O. Nordstedt detected this species in some material of *Nitella* which I had sent to him to determine.

Order XXII. CLADOPHORACEÆ.

310. *Cladophora glomerata* (L.) Kütz.

Lyngbye (Hydrophyt. p. 154) mentions this species under the name of *Conferva glomerata* and says it occurs »in rivulis Færoensibus«. In Lyngbye's Herbarium there are two specimens labelled *Conferva glomerata* of which one was collected: in rivulo ad Qvalbø and the other: ad Vaag, Suderø; I take both to be this species.

Forma *macrogonia* Lyngb.

Hydrophyt. p. 154, tab. 53. In Lyngbye's Herbarium there are three specimens of which two were collected in a lake near Kvalbø and one is labelled: »in lacubus alpinis, Færoæ«. A form which quite agrees with Lyngbye's figure I have found in a gathering collected by Professor Warming on Kalsø. It forms small, dense, erect tufts; the cells are 50—60 μ thick.

Another specimen was collected by Ostenfeld in the lake in Kvalbø Ejde, i. e. perhaps in the same locality whence Lyngbye gathered his material, but it differs from it in being more unilaterally ramified and in the cells being somewhat shorter. Lastly on Hestø I found a form which bears a close resemblance to Lyngbye's figure and has rather thick cell-walls.

311. *C. fracta* (Dillw.) Kütz.

Mentioned by Rostrup (Fær. Fl. p. 87) as common in the Færøes. I have not found this species in the material which I had for examination.

312. *C. Lyngbyei*, nov. sp. Plate IX, figs. 1 and 1'.

Plantula parva 2—4 ctm. vix superans in cæspitibus inter muscos crescens; caulibus cellula basali rhizoidiformi, ramificatione parva et sparsa instructis, sæpe simplicibus, insertionibus irregulariter sitis septis sæpe provectis.

Lat. cell. = $28\ \mu$; long. cell. = 5—10 plo. long.

This small *Cladophora* was found amongst moss gathered by Professor Warming in a ravine near Trangisvaag. Judging from the material collected it forms clumps of entangled filaments. At first I took it to be *Rhizoclonium* as single individuals were not ramified along their greater lengths. But on a closer investigation I found examples with short or shortish branches here and there. The figure 1 (plate IX) represents different parts of a single plant. Fig. 1 a shows the basal part with the rhizoid-like cell which doubtless serves to attach the plant. This cell has irregularly sinuate walls and is devoid of chlorophyl. Then follows a very long and not ramified filament (a longer portion of it is omitted in fig. 1) consisting of long cylindrical cells, and lastly midway between the base and the apex there occurs a comparatively richly ramified part (fig. 1 b). The starting point of this ramified part of course varies in different examples, being sometimes nearer the basis of the plant, sometimes nearer the apex. But such richly ramified examples seldom occur, in fact branchless ones are far from rare. The ramification is characterized by considerable variety in the situation of the basal wall of the lateral branches, which is sometimes situated at its basis, sometimes — in fact very often — far out on it¹. The starting point of the lateral branch also varies; it may emerge from directly under a cross-wall at the top of the mother-cell, or above a cross-wall at the basis of the mother-cell, or from anywhere between these two points. Over this richly ramified part (fig. 1 b) the plant shown in fig. 1 consists first of a

¹ Cfr. *Cladophora profunda* Brand. *Hedwigia* 1895, p. 222, and Brand: *Cladophora Studien* in Bot. Centralblatt 1899, vol. 79, where a full description is given of the peculiar mode of branching, which according to Brand is occasioned by what he terms 'evectio'. Rosenvinge has already partially treated this subject in his: *Væxtforhold hos Cladophora og Chætomorpha* (Bot. Tidsskrift, vol. XVIII, 1892). According to the latter paper by Brand — which came out after I had finished writing this paper — it is possible that our species is perhaps a phase of development of a species already known, but which species I cannot say. It seems to me at all events that it can hardly be referred to any of the numerous varieties and forms of *Cladophora fracta* and *glomerata* mentioned by Brand.

shorter not ramified part, then a single lateral branch occurs (fig. 1 c), then again a longer not ramified part; the topmost cells in the apex of the plant were dead or more or less disorganized.

The plant here figured is nearly 3 cm. long. The breadth varies, with an average of about $28\ \mu$; the length of the cells is ten times the breadth.

313. *Ægagropila Martensii* Menegh. Plate X, fig. 1.

Unfortunately I have only had dried material for examination; it was collected by Ostenfeld in Sandsvatn on Sandö where it was floating about in the water. The size of the single colonies (*Cænobia* cfr. Kjellman¹) varies from that of a pea to that of a hazel-nut. The single larger specimens which occur occasionally are no doubt made up by the pressing together during desiccation of smaller specimens, at any rate they are very easily separated and Ostenfeld also tells me that he does not remember having seen any larger than a hazel-nut.

At the time of gathering the single cænobia were doubtless nearly spherical, though somewhat irregular in form, some of the apices of the branches having here and there protruded beyond others. The filaments of cells are somewhat rigid and loosely connected so that the whole cænobium has a less compact appearance. The colour of the dried plant is a dark dingy olive green, and according to Ostenfeld that of the living plant was the same. The cells were so opaque that it was necessary to soak the material in potassium hydrate in order to render it transparent for microscopic examination.

When placed under a microscope and slightly magnified the cænobium presents the following features: — from a certain point on the cænobium — a point sometimes in the middle and sometimes nearer the margin — numerous copiously ramified branches or individuals radiate; in younger plants these must be regarded as branches belonging to the same plant, but in older specimens they occur as independent individuals, the more or less copiously ramified branches having become separated through the death of the older cells in the middle of the cænobium. All these individuals are kept together partly by the entangling of the branches, and partly and mainly by means of the rhizoid-like branches, which

¹ F. R. Kjellman: »Zur Organographie und Systematik der Ægagropilen in Nova Acta Reg. Soc. Ups. Ser. III, 1898.

commonly proceed from the lowest cells in the branches and are often just like hands catching other filaments. Sometimes also the apices of the branches terminate in such rhizoid-like branches (fig. 1 c plate X); the cells in these branches do not contain so much chlorophyll as the other cells. I have not found in this species any differentiation of variously developed specimens such as is mentioned by Kjellman in his exhaustive description of the *Ægagropila canescens*.

The basal bodies of gonidial character described by Kjellman also appear to be of but rare occurrence here. I have only once seen some cells at the base of a filament which I thought were identical with Kjellman's basal bodies (fig. 1 b plate X), they consisted of two cells, the contents of which were dark-green and they were distinguished by their rather thick walls. From both the cells proceeded richly ramified filaments.

Empty cells in the apices of branches have also generally been found here as well as in the species examined by Kjellman, but if they are due to the formation of swarm-spores or are occasioned by mere outer mechanical causes I cannot tell, at all events I have not seen holes in the wall.

The branches are sometimes opposite and sometimes spreading and the ramification is altogether very irregular as the main filament is often undeveloped. The cells are sometimes nearly cylindrical and sometimes — and this applies particularly to the older cells — inflated at the apex (Fig. 1 a Plate X). The thickness of the cylindrical cells varies with an average of about $60\ \mu$, the length is about 5—10 times greater. The cell-walls of the older cells attain rather a considerable thickness, up to $8\ \mu$.

If we now compare this Færøese species with those of Kjellman's in his above-mentioned work, I think it is nearest to *Ægagropila Martensii*. The specimens in Nordst. and Wittr. Exsic. No. 112 bear a very fair resemblance in habit to those from the Færøes, but a closer examination shows some smaller differences of which I shall especially point out that the cells of *Æ. Martensii* in N. and W. Exs. are considerably more inflated, even the younger cells, furthermore, that the cells are throughout proportionally shorter and lastly that the cell-wall is considerably thicker than in the specimens from the Færøes.

As to the fact of my having seen among the Færøese specimens an individual in the cœnobium proceed from a basal body which

according to Kjellman are wanting in *Æ. Martensii* I must remark that though I have had many cœnobia for examination I have, as mentioned above, only once come across such a basal body, this, at all events proves that they are rare.

To this species I think we may furthermore refer the Færøese species which are to be found in Lyngbye's Herbarium under the name of *Conferva ægagropila* and with regard to which Lyngbye (l. c. p. 151) writes: »In lacu prope Vay Suderøe Færoæ copiosissime, totum fundum lacus, quantum e ripa videre licuit, globulis suis numerosissimis denso crassoque velamine ubique tegens, etiam in ripam ejecta, sed nunquam in aquæ superficie natans«. True, Lyngbye's description also suits *Cladophora Sauteri* to which species Wille (l. c. p. 59) has referred Lyngbye's *Conferva ægagropila*, but the fact is that Lyngbye has mentioned several species collectively under this name, also *Ægagropila Sauteri*, as specimens of this species are to be found in his herbarium (from the well-known habitat in the lake of Sorö) and it is to these specimens that his description and figures at least partly refer.

314. *Rhizoclonium hieroglyphicum* (Ag.) Kütz.

Lat. fil. — 20—26 μ .

Found in material from Midvaag (Vaagö); and in a gathering from mountain heights on Bordö (450 m.).

315. *R. pachydermum* Kjellm. β *tenuior* Kjellm. Plate X, fig. 2.

Kjellman: The Algæ of the Arctic Sea p. 310. Rosenvinge: Grønlands Havalger p. 911.

Amongst moss in a ravine near Tværaa Professor Warming has collected a *Rhizoclonium* which I think may be referred to the above-named species. This alga, which Kjellman found on the shores of Nova Zembla and Wormskiold — according to Rosenvinge — in Greenland (unfortunately the specimens in the herbarium in Copenhagen is wanting in nearer indication of habitat and way of growth), occurs in the Færøes in freshwater. This freshwater form from the Færøes agrees on the whole with Kjellman and Rosenvinge's descriptions, but some smaller differences are to be found of which I shall especially mention that the cells are generally longer, the cell-walls thinner and the breadth of the filaments smaller. The breadth of the older filaments varies with an average of about 30 μ , often smaller than broader. In the older filaments the cell-wall attains a thickness 3—4 μ , but is considerably

thinner in the younger. The length of the branches varies also considerably passing with even stages from quite short to long all of which again are sometimes more or less branching, the short branches can therefore hardly be called rhizoids (as also pointed out by Rosenvinge) as Kjellman calls these short branches of the main form. True rhizoids do not occur in the specimens from the Færøes.

The ramification is besides very irregular, sometimes longer portions of the filaments are quite branchless (fig. 2 a) and sometimes they are richly ramified in the characteristic irregular way mentioned by Kjellman, Gay, Rosenvinge and others (fig. 2 c), most frequently the basal wall of the lateral branch occurs straight in front of the cross-wall in the main filament, but its position as shown in fig. c can vary considerably.

316. *R. sp.* Plate X, fig. 3.

In 1896 I found on damp rocks near Klaksvig a *Rhizoclonium* which together with sterile *Oedogonia* and *Zygnema*, etc. formed a green covering on moss.

This *Rhizoclonium* is rather remarkable and doubtless deserves to be regarded as a distinct species. Being ramified it puts one in mind of *R. pachydermum*, but it was not however so richly ramified as the latter species, such ramified parts as shown in fig. 3a and b occurred only now and then. Branchless filaments were most frequent, fig. 3c and d are smaller portions of such filaments. Here and there thick, short rhizoids occurred, always without dissepiment in open connection with the mother-cell. I have not seen multicellular rhizoids. The filaments were often geniculated at the rhizoids. The ramification was as usual irregular, as shown in the figures. The thickness of the cells varied with an average of about $35\ \mu$ and the length of the cells was about $1\frac{1}{2}$ —3 times longer. The cell-wall was rather thin, in older cells it sometimes attains to a thickness of $5\ \mu$.

This species can hardly be referred to any of the 5 species mentioned by Stockmayer in his paper: »Ueber die Algengattung *Rhizoclonium*«¹, only two of them are ramified, *R. pachydermum* and *R. Hookeri*, and it is quite distinct from both of them. In »Grönlands Havalger« (p. 913) Rosenvinge mentions *Rhizoclonium riparum* var. *polyrhizum* Rosenv. which sometimes has unicellular rhizoids without dissepiment, but unicellular rhizoids with dissepiment as

¹ Verhandl. der Zool.-bot. Gesellsch. in Wien 1890, p. 571.

well as multicellular rhizoids have also been found, and even if the above-mentioned *Rhizoclonium* partly resembles this, yet it seems to me to differ so much from it that it cannot be referred to it.

Order XXIII. VAUCHERACEÆ.

317. *Vaucheria pachyderma* Walz.

This species seems to be rather common in the Færøes.

The specimens from the Færøes are very near to the variety *islandica* described by me (Bot. Tidsskrift Bind 22, p. 137), though they are considerably smaller.

Long. oospor. = 150 μ ; lat. oospor. = 139 μ .

Specimens were found on Nolsø; Nordredal (Str.); and Trangisvaag (Syd.).

Lyngbye found this species and mentions it under name of *V. Dillwynii* in Hydrophyt. p. 77, tab. 21, but as he here only writes: »Habitat in umbrosis terrestribus sat frequens« and does not particularly mention the Færøes as its habitat Rostrup and Wille have not included this species in their list. In Lyngbye's Herbarium specimens are found from Thorshavn (Str.); Eldevig (Öst.); and Sumbö (Syd.).

True *Vaucheria sessilis* corresponding to Walz and Hans Götz's descriptions (Flora 1897) I have not seen in the collections I have examined.

318. *V. hamata* (Vauch.) Lyngb.

H. Götz l. c. p. 109, fig. 31.

Næs (Öst.).

319. *V. coronata* Nordst.

Midvaag (Vaagö).

Lyngbye's *V. aquatica* in Hydrophyt. p. 79 with regard to which he writes: »Ad Gasterosteum aculeatum in lacu subalpino prope Næs Österöe Færoæ emortuum ipse vidi«, is as Walz has already pointed out a *Saprolegniacea*.

Order XXIV. CHARACEÆ.¹

320. *Chara fragilis* Desv. subspec. *delicatula* (Ag.) f. *verrucosa* Itzigs.

Rostrup (Fær. Fl. p. 72) calls this species *Chara fragilis* forma *capillacea*.

Found in watercourses and bog pools on Sandö; Nolsö; and Hove (Syd.); and reported by Rostrup from Sandö; and from tarns on Hestö.

¹ Determ. O. Nordstedt.

321. *Nitella opaca* Ag.

Found in Leinumvatn (Str.); Norbes Ejde and Kvanhauge (Syd.); Grothusvatn (Sandö); and by Rostrup on Sandö; and Hestö.

III. Phæophyceæ.

Order XXV. HYDRURACEÆ.

322. *Hydrurus fœtidus* (Vill.) Kirchn.

Found by Lyngbye; in Hydrophyt. p. 203 he calls it *Palmella Myosurus* and gives an excellent description of it. With regard to its habitat Lyngbye writes: »Habitat in rivulo alpino leniter fluente ad rupem Slatteratind prope Eide Österöe Færoæ saxis adnata, copiosissime«.

IV. Rhodophyceæ.

Order XXVI. HELMINTHOCLADIACEÆ.

323. *Chantransia Hermannii* (Roth.).

In 1896 I found in a small stream near Mölen at Ejde (Öst.) *Fontinalis* quite covered with a small *Chantransia*-like plant which I relying on Kirchner's description in Alg. Schles. p. 46 and on Kützing's figure (Tab. phycol. V, tab. 43) feel justified in referring to the above-named species.

The cells in the apices of the main filaments as well as in the apices of the nearly straight stiffly erect lateral branches often terminate in a rather long colourless hair.

As is well-known the greater part of the *Chantransia*-species must be regarded as more or less highly developed stages of *Batrachospermum*, *Lemanea*, *Thorea*, etc. (cfr. F. Brand: Ueber *Chantransia*¹) and we might therefore expect to find some of these genera in the Færöes. Accordingly I was very much interested in finding a small fragment of a *Batrachospermum* sp. in Plankton from Sörvaagsvatn.

The fragment which I found corresponds very closely to one of the lateral branches in Cooke's figure (Brit. Freshw. Algæ pl. 122) of *B. moniliferum* Roth. var. *proliferum* Carm.

This paper was finished in December 1898.

¹ Hedwigia 1897, vol. XXXVI, p. 300.

EXPLANATION OF THE PLATES.

Plate VII.

- Fig. 1. *Enastrum crassum* (Bréb.) Ralfs: *a* semicell in front view; *c* and *c'* end view of semicells with more or less well-marked protuberances on each side of the semicells; 1' var. *scrobiculata* Lund.
- Fig. 2. *E. verrucosum* Ehrenb.: two different forms of this species.
- Fig. 3. *E. ampullaceum* Ralfs var. *scrobiculata* Nordst.
- Fig. 4. *E. inerme* (Ralfs) Lund.
- Fig. 5. *E. Lyngbyei* nov. sp.
- Fig. 6. *Cosmarium perforatum* Lund. var. *rotundata* nov. var.
- Fig. 7. *C. Schübelerii* Wille. Forma.
- Fig. 8. *C. pseudopyramidatum* Lund. **maxima* nov. subsp.
- Fig. 9. *C. decedens* Reinsch.
- Fig. 10. *C. boreale* nov. sp.
- Fig. 11. *Xanthidium aculeatum* Ehrenb.
- Fig. 12. — — — forma *brevispina*.
- Fig. 13. *X. quadricornutum* Roy & Biss. forma *longispina* n. f.
- Fig. 14. *Staurostrum horametrum* Roy & Biss. var. *feroënsis* n. v.
- Fig. 15. *S. rostellum* Roy & Biss.
- Fig. 16. *S. crenulatum* (Nägl.) Delp.
- Fig. 17. *S. Psendosebaldi* Wille.
- Fig. 18. *Cosmarium Regnesi* Reinsch.

Plate VIII.

- Fig. 1. *Staurostrum jaculiferum* West: *a* cell with 3 spines on each semicell seen in side view; *b* cell with 3 spines on the top semicell and 4 on the bottom one seen in side and vertical view; *c* two individuals formed by division, but not yet separated from each other. One of the semicells of the topmost individual has 2 spines (marked 2) and the other 3; *d*, a two-sided specimen seen in front, side and vertical view.
- Fig. 2. *S. megacantha* Lund. forma.
- Fig. 3. *S. oxyacantha* Arch. forma *torta*.
- Fig. 4. *S. inconspicuum* Nordst.: *a* several cells connected together; *c* end view of a semicell.
- Fig. 5. *Chaetosphaeridium Pringsheimii* Kleb. forma *conferta* Kleb.: *a* plant with cells firmly bound together; *b* more loosely connected plant, the connecting-tubes between the cells quite distinct; *c* cells seen in side view; *d*, *e*, *f* and *g* young individuals.
- Fig. 5. *Enteromorpha micrococca* forma *subsalsa* Kjellm.: *a* portion of thallus slightly magnified; *b* a thin filament more highly magnified; *c* portion of thallus more highly magnified; *d* transverse section of a filament.

Plate IX.

- Fig. 1. *Cladophora Lyngbyei* nov. sp.: *a*, *b*, *c* parts of the same plant; *a* basal part with rhizoids; *b* more branching centre part; *c*

topmost part. Between each of these parts longer branchless parts have been omitted; 1' base of a smaller plant.

- Fig. 2. *Prasiola crispa* (Lightf.) Kütz.: *a*, *b*, *c* parts of a young plant; *a* base (2 *a'* the same more highly magnified), at *r* rhizoids; *b* centre part; *c* topmost part of thallus.
- Fig. 3. *Enteromorpha compressa* (L.) Grev. From Kirkebökamp (Str.) (leg. Lyngbye): *a* portion of thallus slightly magnified; *b*, a similar portion with curly surface; *c* transverse section of thallus; *d* portion of thallus more highly magnified.
- Fig. 4. *Enteromorpha compressa* (L.) Grev. From Fuglø: *a* portion of thallus slightly magnified; *b* portion of thallus more highly magnified; *c* transverse section of thallus.

Plate X.

- Fig. 1. *Ægagropila Martensii* Menegh.: *a* portion of filament with rhizoids; *b* portion of filament with basal body; *c* portion of filament with the apex differentiated into a rootlike organ of attachment.
- Fig. 2. *Rhizoclonium pachydermum* Kjellm. *β tenuior* Kjellm.: *a*, *b* more or less richly branching filaments; *c* richly branching portion more highly magnified.
- Fig. 3. *Rhizoclonium* sp.: *a*, *b* portions with branches; *b*, *c*, *d* portions of filaments with rhizoids.
- Fig. 4. *Arthrodesmus Incus* (Bréb.) Hass. forma.
- Fig. 5. *Scenedesmus denticulatus* Lagerh.

FRESHWATER DIATOMS

BY

ERNST OSTRUP.

THE following notes on the freshwater Diatoms of the Færøes are based on the freshwater Algæ material — 135 gatherings, four of which contained Plankton — collected by Mr. Børgesen, Mr. Jensen, Mr. Ostenfeld and Prof. Warming on the Danish Expeditions to the Færøes in 1895—1899.

Placochromaticæ.

AMPHIPRORA Ehr. 1843. Cl. Syn. I, p. 13.

1. *Amphiprora paludosa* W. Sm. var. *hyperborea* Grun., Cl. & Grun. arc. D. tab. V, fig. 86.

Plankton from »the mouth of Sandsvatn« (Sandö).

PLEUROSIGMA W. Sm. 1852. Cl. Syn. I, p. 32.

2. *Pleurosigma angulatum* Quekett var. *finmarchica* Cl., Cl. & Grun. arc. D. tab. III, fig. 67.

Plankton from »the mouth of Sandsvatn« (Sandö).

CALONEIS Cl. Syn. I, p. 46.

3. *Caloneis lepidula* Grun., V. H. Syn. tab. XIV, fig. 42.

Not rare in a gathering from Højefjæld on Bordö.

4. *C. bacillaris* Grun., V. H. Syn. tab. XII, fig. 27.

Nolsö.

5. *C. fasciata* Lgst., Lgst. Spetsb. tab. II, fig. 11, V. H. Syn. tab. XII, figs. 31—34.

Here and there.

I agree with Cleve (Syn. I p. 50) in including *Nav. fonticola*, *fontinalis* and *Lacunarum* under *Nav. fasciata* Lgst.

Var. *lenticularis* m. Fig. 29 ^{660/1}.

L. 0,018 mm., B. 0,005 mm. Valve lenticular. Apical area distinct; rather broad transpical fascia. Striæ very delicate, at right angles to the raphe.



Fig. 29.

This small species which appears in a gathering from Bosdalafos (Vaagö) is undoubtedly related to *Nav. fontualis* Grun. V. H. Syn. tab. XII, fig. 33 which P. T. Cleve (Syn. I p. 50) refers to *Caloneis fasciata* Lgst.

6. *C. Silicula* Ehr. var. *alpina* Cl., V. H. Syn. tab. XII, fig. 21.

Var. *gibberula* Kütz., V. H. l. c., fig. 19.

Var. *ventricosa* (Ehr.?) Donk., V. H. l. c., fig. 24.

Found dispersed in the material, but not in considerable quantity in any single gathering. The variety »*gibberula*« in Plankton.

7. *C. alpestris* Greg., V. H. Syn. tab. XII, fig. 30.

Trangisvaag (Syderö).

8. *C. obtusa* W. Sm., Donk. Br. D. tab. III, fig. 12.

Trangisvaag (Syderö).

9. *C. formosa* Greg. var. *holmiensis* Cl., V. H. Syn. tab. XI, fig. 2.

Trangisvaag (Syderö).

10. *C. amphibæna* Bory var. *subsalina* Donk., V. H. Syn. tab. XI, fig. 6.

Rare (Hestö).

11. *C. brevis* Greg., V. H. Syn. tab. XI, figs. 18—19.

Trangisvaag (Syderö).

The form found by me stands with regard to its outline between the two above-mentioned figures by Van Heurck, of which Cleve (Syn. I p. 61) refers fig. 18 to the variety: *vexans* Grun.

NEIDIUM Pfitzer 1871. Cl. Syn. I, p. 67.

12. *Neidium bisulcatum* Lgst., A. S. Atl. tab. XLIX, fig. 15.

Here and there. Plankton.

13. *N. affine* Ehr. var. *amphirhynchus* Ehr., A. S. Atl. tab. XLIX, fig. 27.

Here and there.

Var. *genuina* Cl. forma *minor*, A. S. l. c., fig. 23.

Here and there.

14. *N. dubium* Ehr., A. S. Atl. tab. XLIX, fig. 24.

Nolsö.

DIPLONEIS Ehr. 1840. Cl. Syn. I, p. 76.

15. *Diploneis interrupta* Kütz., Lgst. Spetsb. tab. II, fig. 16.

Found dispersed, and usually more isolated; not rare in a gathering from Trangisvaag. Plankton.

16. *D. didyma* Ehr., V. H. Syn. Suppl. B, fig. 20.

Trangisvaag (Syderö).

17. *D. elliptica* Kütz., A. S. Atl. tab. VII, figs. 29 and 32, V. H. Syn. tab. X, fig. 10.

Found dispersed in most of the gatherings, but never in considerable quantity. (Plankton). Varies somewhat in size. In gatherings from Høje fjæld (Bordö) and Viderejde (Viderö) I have found smaller forms, which agree most closely to *D. Puella* (Schum.?) Cl. V. H. Syn. tab. X, fig. 11, and are undoubtedly only variations of *D. elliptica* (cfr. Cl. Syn. I, p. 92).

18. *D. ovalis* Hilse., A. S. Atl. tab. VII, fig. 33.

Not rare in a gathering, labelled: »Algæ, in slowly running water near Bosdalafos» (Vaagö).

19. *D. Smithii* Bréb., Grun. Fz. Jos. L. tab. I, fig. 41.

Trangisvaag (Syderö).

GYROSIGMA Hassall 1845. Cl. Syn. I, p. 112.

20. *Gyrosigma acuminatum* Kütz., V. H. Syn. tab. XXI, fig. 12.

Rare. Tværaa (Syderö) and in Plankton from the lake in Vaags Ejde (Vaagö).

FRUSTULIA Ag. 1824. Cl. Syn. I, p. 122.

21. *Frustulia vulgaris* Thw., V. H. Syn. tab. XVII, fig. 6.

22. *F. rhomboides* Ehr., V. H. Syn. tab. XVII, figs. 1--2.

Var. *saxonica* Rbh., V. H. l. c., fig. 4.

Var. *viridula* Bréb., V. H. l. c., fig. 3.

The above-mentioned species and variations of *Frustulia* occur rather often in the material. *F. rh. saxonica* appears to be the most frequent, it, however, varies in having apices more or less capitate.

23. *F. vitrea* m. Fig. 30 ⁶⁶⁰/₁.



Fig. 30.

L. 0,02—0,024 mm., B. 0,0055 mm. Valve nearly linear; apices truncate. Central pores comparatively distant. Striæ exceedingly delicate, just visible on applying Zeiss' Apochromate 2 mm.; they appear to be at right angles to the raphe. I think I have seen two longitudinal lines close to and parallel with the margin, but I am not quite sure of it.

The reason why I have placed this small hyaline form under *Frustulia* is mostly on account of the appearance of its central nodule. It may perhaps be related to *Navicula El Kab* O. M. (Bacil. a. d. Natron-

thälern El Kab tab. XII, fig. 22) which the author places under the *Navicula cuspidata* group.

Here and there. More conspicuous in a gathering labelled: »Covering bare spots on peaty ground«. South side of Trangisvaagfjord (Syderö)¹.

AMPHIPLEURA Kütz. 1844. Cl. Syn. I, p. 125.

24. *Amphipleura pellucida* Kütz., V. H. Syn. tab. XVII, figs. 14—15.

Only one example occurred in Plankton from the lake in Kvalbø-Ejde (Syderö).

NAVICULÆ MESOLEJÆ Cl. Syn. I, p. 127.

25. *Navicula Rotæana* Rbh., Lgst. Spetsb. tab. I, fig. 13, V. H. Syn. tab. XIV, figs. 17—19.

Found dispersed in several of the gatherings. Plankton.

Var. *oblongella* Grun., V. H. l. c., fig. 21.

Found intermingled with the main species in gatherings from Trangisvaag (Syderö).

26. *N. bacilliformis* Grun., V. H. Syn. tab. XIII, fig. 11.

Kirkebökamp (Strömö).

27. *N. Pupula* Kütz., V. H. Syn. tab. XIII, fig. 15.

Sand (Sandö); Trangisvaag (Syderö).

NAVICULÆ ENTOLEJÆ Cl. Syn. I, p. 131.

28. *Navicula contenta* Grun. var. *biceps* Arnott, V. H. Syn. tab. XIV, fig. 31 b.

Here and there. Not rare in a gathering from Höjefjæld on Bordö.

29. *N. perpusilla* Grun., V. H. Syn. tab. XIV, figs. 22—23.

Trangisvaag, Vaag (Vaagö); Höjefjæld (Bordö). In the latter gathering, not rare.

NAVICULÆ DECIPIENTES Grun. 1880. Cl. Syn. I, p. 138.

30. *Navicula Semen* Ehr., Grun. Fz. Jos. L. tab. I, fig. 34.

Rather rare. Nolsö; Tværaa (Syderö).

31. *N. integra* W. Sm., V. H. Syn. tab. XI, fig. 22.

Rare. Trangisvaag (Syderö).

¹ Since writing this paper I have found a *Frustulia vitrea* in »Surtarbrand« from Illagil, Iceland. In »Meddelelser fra dansk geologisk Forening« No. 6, p. 27 it is reported as *Navicula* sp. nov. with reference to my present paper on the Færøese Diatoms.

32. *N. subtilissima* Cl., Cl. Diat. Finl. tab. II, fig. 15.
Rather rare. Trangisvaag (Syderö); Thorshavn (Strömö).

NAVICULÆ MICROSTIGMATICÆ Cl. Syn. I, p. 141.

33. *Stauroneis anceps* Ehr. var. *linearis* Ehr., V. H. Syn. tab. IV, figs. 7—8.

Nolsö; Trangisvaag (Syderö).

Var. *amphicephala* Kütz., V. H. Syn. tab. IV, figs. 4—5.

Not rare.

34. *S. Phoenicenteron* Ehr. var. *amphilepta* Cl., Herib. Diat. d'Auv. tab. III, fig. 18.

Here and there.

35. *S. parvula* Grun. var. *prominula* Grun., Cl. Syn. I, p. 149.

Rare. Trangisvaag (Syderö).

Var. *producta* Grun., V. H. Syn. tab. IV, fig. 12.

Not common. Nolsö; Viderejde (Viderö); Trangisvaag (Syderö).

36. *S. Legumen* Ehr., V. H. Syn. tab. IV, fig. 11.

Nolsö; Örnefjæld (Syderö). Plankton.

37. *S. Smithii* Grun., V. H. Syn. tab. IV, fig. 10.

Rare. Sand (Sandö).

38. *S. javanica* Grun., Pant. III tab. VIII, fig. 143.

Rare. Nolsö.

39. *S. acuta* W. Sm. var. *densestriata* m. Fig. 31 ^{660/1}.



Fig. 31.

L. 0,056 mm., B. 0,01 mm. Striæ at least 25 in 0,01 mm. Valve rhombic-lanceolate. The apical area dilated in the central part of the valve. Stauros broadening towards and reaching the margin, which shows a slight incurvation at this point. Striæ delicate and obscure, distinct only at the stauros.

In spite of the delicacy of its striæ and the somewhat different aspect of its central part I regard this form as a variety of *S. acuta* W. Sm. With regard to the number of striæ it approaches more closely to *S. Frauenfeldiana* (Grun. Nov. Exp. tab. I, fig. 13), but judging from Grunow's figure of it, *S. Frauenfeldiana* and the form in question are doubtless two distinct species.

Found in a gathering labelled: »Green algæ from a swamp on Nolsö«.

CYMBELLA Ag. 1830. Cl. Syn. I, p. 156.

40. *Cymbella microcephala* Grun., V. H. Syn. tab. VIII, fig. 36.

Plankton from Sörvaagsvatn (Vaagö).

41. *C. Cesatii* Rbh., V. H. Syn. tab. VIII, fig. 35.

Rare. Kirkebökamp, Thorshavn (Strömö).

42. *C. angustata* W. Sm., Lgst. Spetsb. tab. II, fig. 10.

Rare. Örnefjæld (Syderö). Plankton.

Fig. 32 (^{660/1}) shows a *Cymbella angustata* W. Sm. which differs from the typical form in having a distinct central area. It was found in a gathering from Kirkebökamp (Strömö).



Fig. 32.

43. *C. alpina* Grun. var., Öst. Danske Diat. Afl. tab. II, fig. 18.

Rare. Kirkebökamp (Strömö), between Örnefjæld and Trangisvaag (Syderö).

44. *C. austriaca* Grun.? var. *densestriata* Öst., Öst. Danske Diat. Afl. tab. II, fig. 6.

Kirkebökamp (Strömö).

45. *C. amphicephala* Naegeli, A. S. Atl. tab. IX, fig. 65.

Örnefjæld (Syderö); Midvaag (Vaagö).

46. *C. naviculiformis* Auersw., V. H. Syn. tab. II, fig. 5.

Örnefjæld, Trangisvaag (Syderö); Nolsö.

47. *C. cuspidata* Kütz., V. H. Syn. tab. II, fig. 3.

Rare. Sand (Sandö).

48. *C. turgida* Greg., V. H. Syn. tab. III, fig. 12.

Kirkebökamp (Strömö).

49. *C. ventricosa* Kütz., V. H. Syn. tab. III, figs. 13, 15 and 18.

Rather common. Plankton.

50. *C. hebridica* Grun., Cl. Diat. Finl. tab. II, figs. 16—17.

Höjvig (Strömö).

51. *C. gracilis* Rbh., V. H. Syn. tab. III, fig. 23.

Thorshavn (Strömö); Höjefjæld (Bordö).

52. *C. incerta* Grun. var. *naviculacea* Grun., Cl. Grönl. & Argent. tab. VI, fig. 11.

Here and there.

53. *C. æqualis* W. Sm., V. H. Syn. tab. III, fig. 2.

Here and there.

54. *C. sinuata* Greg., V. H. Syn. tab. III, fig. 8.

Rather rare. Kirkebökamp (Strömö); Trangisvaag (Syderö).

Var. *antiqua* Grun.?, Öst. Danske Diat. Afl. tab. II, fig. 10.

Thorshavn (Strömö).

55. *C. affinis* Kütz., V. H. Syn. tab. II, fig. 19, A. S. Atl. tab. X, fig. 27.

Not rare. In some of the gatherings, e. g. from Ejde (Österö) and Tværaa (Syderö) very common. Plankton.

56. *C. parva* W. Sm., V. H. Syn. tab. II, fig. 14.

Kvalbø, Trangisvaag, Famievatn (Syderö).

57. *C. Botellus* Lgst., Lgst. Spetsb. tab. II, fig. 22.

Thorshavn (Strömö).

58. *C. cymbiformis* (Ag.?) Kütz., V. H. Syn. tab. II, fig. 11 a, b, c.

Here and there.

59. *C. Cistula* Hempr., V. H. Syn. tab. II, fig. 12, A. S. Atl. tab. X, fig. 1.

Not rare in many of the gatherings. Plankton.

60. *C. lanceolata* Ehr., V. H. Syn. tab. II, fig. 7.

Here and there. Plankton.

61. *C. helvetica* Kütz., V. H. Syn. tab. II, fig. 15, A. S. Atl. tab. X, fig. 23 and tab. LXXI, fig. 19.

Found dispersed. Plankton.

62. *C. aspera* Ehr., V. H. Syn. tab. II, fig. 8.

Found scattered about in the material, often as a transitional form to *Cymbella lanceolata*.

In a gathering from Nolsö I found a *Cymbella aspera*, the valve measures about 0.24 mm. in length and 0.045 mm. in breadth. Dorsal striæ 6 in 0.01 mm., more distant in the middle, somewhat closer towards the apices. Ventral striæ 6 in 0.01 mm. in the middle, then increasing in number to about 10 in 0.01 mm. towards the apices. Striæ moniliform, puncta on the dorsal side 6 in 0.01 mm., on the ventral side 10 in 0.01 mm. With regard to its size this form comes near to *C. gigantea* Pant. (Pant. III, tab. XXI, fig. 321) and rather near to *C. gastroides* Kütz. in A. S. Atlas tab. IX, fig. 1 (the latter measures 0.3 mm. in length). P. T. Cleve (Syn. I, p. 175) refers both these figures to *C. aspera* Ehr.

GOMPHONEMA Agard 1824. Cl. Syn. I, p. 178.

63. *Gomphonema parvulum* Kütz., V. H. Syn. tab. XXV, figs. 7—9.

Not rare.

64. *G. angustatum* Kütz. var. *producta* Grun., Lgst. Spetsb. tab. I, fig. 14, V. H. Syn. tab. XXIV, figs. 52—55.

Not rare.

65. *G. intricatum* Kütz., V. H. Syn. tab. XXIV, figs. 28—29.

Trangisvaag, Örnefjæld (Syderö).

Var. **dichotoma** Kütz., V. H. l. c., figs. 30—31.

Örnefjæld (Syderö). Plankton.

66. **G. gracile** Ehr. var. **naviculacea** W. Sm., V. H. Syn. tab. XXIV, figs. 13—14.

Not rare.

67. **G. lanceolatum** Ehr. var. **insignis** Greg., V. H. Syn. tab. XXIV, fig. 39.

Höjefjæld (Bordö).

Var. **brevistriata** m. Fig. 33 ⁶⁶⁰/1.

L. 0,038 mm., B. 0,008 mm. Striæ 10 in 0,01 mm.

By an interruption of the striæ a rather broad apical area is formed, dilated in the middle of the valve to a round space. This variety approaches nearest to *G. lanceolatum insignis*.



Found in a gathering labelled: »Trangisvaag (Syderö) at Fig. 33, some 200 metres«.

68. **G. subclavatum** Grun., V. H. Syn. tab. XXIV, fig. 1 and tab. XXIII, figs. 38—41.

Var. **montana** Schum., V. H. Syn. tab. XXIII, fig. 36.

Not rare. The variety occurs intermingled with the main species.

69. **G. acuminata** Ehr. var. **coronata** Ehr., V. H. Syn. tab. XXIII, figs. 15—17.

Rather common, but generally does not occur in any considerable quantity in any of the gatherings.

70. **G. constrictum** Ehr., V. H. Syn. tab. XXIII, figs. 5—6.

Tværaa (Syderö); Næs (Österö); Vedvig (Viderö). Common in a gathering from the latter locality.

71. **G. geminatum** Lyngb., W. Sm. Syn. tab. XXVII, fig. 235.

Here and there. Occurs in large quantity in a gathering labelled: »Trangisvaag (Syderö), at the northern Hammer«.

72. **G. olivaceum** Lyngb., V. H. Syn. tab. XXV, figs. 20—21.

Trangisvaag, Tværaa (Syderö); Nordreöer.

73. **G. ? inflatum** m. Fig. 34 ⁶⁶⁰/1.

L. 0,031 mm., B. in the middle 0,006 mm. Striæ 15 in 0,01 mm.

Valve slightly undulated, broadest in the middle. Narrow apical area. Central area orbicular, reaching half way between the central nodule and the margin. Striæ more distant, slightly radiant in the middle, but at the dorsal end of the



Fig. 34.

apical axis at right angles to the raphe. Terminal nodules at a little distance from the apices. No unilateral stigma.

I have referred this species to *Gomphonema* on account of the form being somewhat unsymmetrical with regard to the transapical axis and the differently directed striae at its apices, the latter character in particular appears to point to *Gomphonema*. Perhaps it comes nearest to *G. angustatum* Kütz. as according to Cleve (Syn. I p. 181) the unilateral stigma of the latter is »indistinct«, and sometimes it even appears to be wanting. Cfr. *G. angustatum* var.? *lapponica* A. Cl. in A. Cl. Lule Lap., fig. 20.

ANOMOEONEIS Pfitzer 1871. Cl. Syn. II, p. 5.

74. *Anomoeoneis serians* Bréb., V. H. Syn. tab. XII, fig. 7 and Supl. B, fig. 31.

75. *A. brachysira* (Bréb.) Grun., V. H. Syn. tab. XII, figs. 8—9.

76. *A. exilis* (Kütz.) Grun., V. H. Syn. tab. XII, figs. 11—12.

Var. *thermalis* Grun., V. H. l. c., fig. 10.

The above species or varieties of *A. serians* are fairly common in the material. Plankton. A variety which was found intermingled with them agrees most closely with Van Heurek's fig. 12, but the capitate apices shown in this figure are wanting.

77. *A. zellensis* Grun., V. H. Syn. tab. XII, fig. 14.

Rather rare. Vaag (Syderö); Højefjæld (Bordö).

NAVICULÆ HETEROSTICHÆ. Cl. Syn. II, p. 8.

78. *Navicula cocconeiformis* Grun., V. H. Syn. tab. XIV, fig. 1.

Occurs in several of the gatherings, but rarely in any considerable quantity.

NAVICULÆ LINEOLATÆ. Cl. Syn. II, p. 10.

79. *Navicula cryptocephala* Kütz., V. H. Syn. tab. VIII, fig. 5.

Here and there.

Var. *exilis* Kütz., V. H. l. c., fig. 2.

Thorshavn (Strömö); Trangisvaag (Syderö).

80. *N. rhynchocephala* Kütz. var. *amphiceros* Kütz., V. H. Syn. tab. VII, fig. 30.

Sand (Sandö).

81. *N. viridula* Kütz., V. H. Syn. tab. VII, fig. 25.

Var. *slesvicensis* Grun., V. H. l. c., fig. 26.

Var. *rostellata* Kütz., V. H. l. c., figs. 23—24.

Not rare. The variety *slesvicensis* occurs more frequently than the main species; I have found *rostellata* in gatherings from Midvaag (Vaagö) and Sandö.

82. *N. hungarica* Grun., Grun. Öst. Ung. tab. XXX, fig. 42.

Rare. Plankton from »the mouth of Sandsvatn (Sandö).

Var. *capitata* Ehr., Lgst. Spetsb. tab. II, fig. 5.

Rare. Sand (Sandö).

83. *N. cincta* Ehr., V. H. Syn. tab. VII, figs. 13—14.

Midvaag (Vaagö).

Var. *Heufleri* Grun., V. H. l. c., figs. 12 and 15.

Midvaag (Vaagö), mixed with the main species, Thorshavn (Strömö).

Var. *angusta* Grun., V. H. l. c., fig. 17.

Found dispersed in some of the gatherings, but never in large quantities.

84. *N. radiosa* Kütz., V. H. Syn. tab. VII, fig. 20.

Scattered about in the material, but rarely in large quantities.

Var. *tenella* Bréb., V. H. l. c., fig. 21.

Kirkebökamp (Strömö).

85. *N. gracilis* Ehr., V. H. Syn. tab. VII, figs. 7—8.

Trangisvaag (Syderö).

86. *N. peregrina* Ehr., A. S. Atl. tab. XLVII, figs. 57—60.

Trangisvaag (Syderö); Ejde (Österö).

Var. *Meniscus* Schum., V. H. Syn. tab. VIII, fig. 19.

Trangisvaag, Tværaa (Syderö).

Var. *Kefvingensis* Ehr., A. S. Atl. tab. XLVII, fig. 62.

Trangisvaag (Syderö).

87. *N. peregrina* Ehr. var. *Menisculus* Schum.? Fig. 35 ⁶⁶⁰/₁.

L. 0,035 mm., B. 0,01 mm. Striæ 10 in 0,01 mm.

Valve elliptical lanceolate with obtuse apices. Striæ radiate in the middle, convergent towards the apices. Apical area narrow; central area small, orbicular. I have some doubts about regarding this form as a *N. peregrina Menisculus*.

Found in a gathering labelled: »Algæ from Kvanhaugen«, Trangisvaag (Syderö).



Fig. 35.

88. *N. digitoradiata* Greg., V. H. Syn. tab. VII, fig. 4.

Trangisvaag (Syderö).

89. *N. dicephala* (Ehr.?) W. Sm., V. H. Syn. tab. VIII, figs. 33—34.

Here and there.

Var. *subcapitata* Grun., Grun. Foss. Diat. Öst. Ung. tab. XXX, fig. 54.

Hvidenæs (Strömö).

90. *N. Gastrum* Ehr. var. *exigua* Greg., V. H. Syn. tab. VIII, fig. 32.

Kvalbø, Trangisvaag (Syderø).

91. *N. Placentula* Ehr., V. H. Syn. tab. VIII, fig. 28.

Plankton from »the mouth of Sandsvatn« (Sandø).

NAVICULÆ PUNCTATÆ Cl. Syn. II, p. 37.

92. *Navicula scutelloides* W. Sm., var. *minutissima* Cl., Cl. Grönl. & Argent. tab. XVI, fig. 10.

Rare. Sand, Plankton from »the mouth of Sandsvatn« (Sandø).

93. *N. pusilla* W. Sm., V. H. Syn. tab. XI, fig. 17.

Here and there.

Var. *lanceolata* Grun., Ströse Kl., fig. 10.

Plankton from »the mouth of Sandsvatn« (Sandø).

94. *N. humerosa* Bréb., V. H. Syn. tab. XI, fig. 20.

Plankton from »the mouth of Sandsvatn« (Sandø).

95. *N. amphibola* Cl., Lgst. Spetsb. tab. II, fig. 7.

Rare. Nolsø; Trangisvaag (Syderø).

NAVICULÆ LYRATÆ Cl. Syn. II, p. 52.

96. *Navicula pygmæa* Kütz., A. S. Atl. tab. LXX, fig. 7.

Trangisvaag (Syderø). Only found in one gathering where it was rather common.

NAVICULÆ LÆVISTRIATÆ Cl. Syn. II, p. 96.

97. *N. elegans* W. Sm., Donk. Br. Diat. tab. IV, fig. 1.

Rare. Trangisvaag (Syderø). Plankton.

98. *N. palpebralis* Bréb. var. *Barclayana* Greg., Greg. Diat. Cl. tab. IX, fig. 9.

Rare. Trangisvaag (Syderø).

Var. *obtusa* V. H., V. H. Syn. tab. XI, fig. 8.

Rare. Örnefjæld (Syderø).

99. *N. tubulata* m. Fig. 36 ⁶⁰⁰/₁.

L. 0,026 mm., B. 0,011 mm. Striæ about 20 in 0,01 mm.



Fig. 36.

Valve lanceolate with apices obtuse, truncate. Terminal nodules small, situated at the apices. Striæ parallel, absent from the centre. This unstriated part is oval on the one side of the raphe and extends right to the margin, while on the other side it only reaches about half way between

the central nodule and the margin. An elevated apical part occurs on both side of the raphe. This species bears a fairly close resemblance to *N. carinifera* Grun. A. S. Atl. tab. III, fig. 2 from Campeche Bay, but the striae are much closer and, as far as I can see, not punctate.

Found in a gathering from Midvaag (Vaagö).

PINNULARIA Ehr. 1843. Cl. Syn. II, p. 71.

Gracillinae Cl. Syn. II, p. 74.

100. *Pinnularia undulata* Greg. var. *subundulata* Greg., Van Heurck: Types Nr. 140.

Rare. Nordreöer.

101. *P. sublinearis* Grun., V. H. Syn. tab. VI, fig. 25.

Kirkebökaup, Thorshavn (Strömö).

102. *P. leptosoma* Grun., V. H. Syn. tab. XII, fig. 29.

Kvalbö (Syderö).

Capitatae Cl. Syn. II, p. 75.

103. *Pinnularia appendiculata* Ag., V. H. Syn. tab. VI., figs. 30—31.

Nolsö; Kirkebökaup (Strömö); Trangisvaag (Syderö). Not rare in a gathering labelled: »Covering bare spots on peaty ground«, south side of Trangisvaagfjord (Syderö).

104. *P. subcapitata* Greg., V. H. Syn. tab. VI, fig. 22, A. S. Atl. tab. XLIV, fig. 53.

Not common. Thorshavn (Strömö).

105. *P. interrupta* W. Sm. forma *stauroneiformis*, O. M. Riesengeb. tab. III, fig. 18.

Klakken (Bordö). Common in a gathering from Trangisvaag (Syderö).

106. *P. mesolepta* Ehr., V. H. Syn. tab. VI, figs. 10—11.

Trangisvaag (Syderö); Midvaag (Vaagö); Nolsö.

Var. *stauroneiformis* Grun., A. S. Atl. tab. XLV, figs. 52—53.

Nolsö; Syderö.

Var. *angusta* Cl., A. S. l. c., fig. 63.

Midvaag (Vaagö).

Var. *polyonca* Bréb., O. M. Riesengeb. tab. III, fig. 20.

Nolsö.

In a gathering from Syderö I found a small triundulated *Pinnularia* with apices capitate. It approaches *P. mesolepta stauroneiformis* in size,

form and number of striae, but its transapical fascia is bordered by two stronger striae such as O. Müller (Bac. a. d. Hochs Riesengeb. p. 23) has noticed in *P. Brébissonii* and *P. microstauron*. Perhaps this small form might therefore be referred to *P. microstauron*.

107. *P. microstauron* Ehr., A. S. Atl. tab. XLIV, fig. 14, Herib. Diat. d'Auv. tab. IV, fig. 1.

Nolsö; Trangisvaag (Syderö); Sand (Sandö); Højvig, Kirkebökamp (Strömö).

108. *P. termitina* Ehr., A. S. Atl. tab. XLV, fig. 64.

Trangisvaag (Syderö).

109. *P. Oculus* Öst., Öst. Ferskv. Diat. Östg. tab. I, fig. 6.

Trangisvaag (Syderö); Sand (Sandö).

This species, which has been found in the Færøes only in the two gatherings richest in saltwater forms, has also been met with in East Greenland in a locality which seems to suggest that it is a saltwater form (cfr. l. c. p. 269).

Divergentes Cl. Syn. II, p. 77.

110. *Pinnularia divergentissima* Grun., V. H. Syn. tab. VI, fig. 32.

Here and there.

A small *Pinnularia* occurs in a gathering from Midvaag (Vaagö). L. 0.026 mm., B. 0.004 mm., Striae 12—13 in 0.01 mm. Its strongly radiant and convergent striae proves its relationship to *P. divergentissima*, but it differs from this species in being altogether linear.

111. *P. Brébissonii* Kütz., V. H. Syn. tab. V, fig. 7.

Kirkebökamp, Hvidenæs (Strömö).

Var. *diminuta* V. H., V. H. l. c., fig. 8.

Viderejde (Viderö).

112. *P. Legumen* Ehr., V. H. Syn. tab. VI, fig. 16.

Nolsö; Kirkebökamp (Strömö); Trangisvaag (Syderö).

Forma *vix undulata*, V. H. l. c., fig. 17.

Nolsö.

113. *P. platycephala* Ehr., Cl. Diat. of Finl. tab. II, fig. 1.

Næs (Österö). Found one example only, it differs from the typical form in being somewhat shorter and comparatively broader.

L. 0.078 mm., B. 0.019 mm.

114. *P. divergens* W. Sm., W. Sm. Syn. tab. XVIII, fig. 177.

Not rare.

Var. *elliptica* Grun., A. S. Atl. tab. XLIV, figs. 6—7.

Kirkebökamp (Strömö).

Forma *minor*, O. M. Riesengeb. tab. III, fig. 9.

Famievatn (Syderö).

115. *P. diversa* m. Fig. 37 ^{660/1}.

L. 0,039 mm., B. 0,006 mm. Striæ 15 in 0,01 mm.

Valve narrow, rhombic-lanceolate. Striæ radiant, but about midway between the centre and the apices suddenly convergent. The apical area dilated towards the middle and here forming a transapical fascia. This species undoubtedly comes very near to the form — without name — from »Grim Briggs Aberdeen« figured in A. S. Atlas tab. 44, fig. 52, but its striæ are closer.



Fig. 37.

Rare. Viderejde (Viderö).

Distantes Cl. Syn. II, p. 80.

116. *Pinnularia intermedia* Lgst., Lgst. Spetsb. tab. I, fig. 3.

Here and there, but never in any considerable quantity.

117. *P. Balfouriana* Grun., Cl. Syn. II, tab. 1, fig. 18.

Not common. Trangisvaag (Syderö); Ejde (Österö); Højefjæld (Bordö).

118. *P. borealis* Ehr., V. H. Syn. tab. VI, fig. 3.

Scattered about in the material.

119. *P. lata* Bréb., W. Sm. Syn. tab. XVIII, fig. 167.

Not rare, but never in large quantity in any of the gatherings.

In fig. 38 (^{660/1}) I have figured a fragment of *P. lata* which is distinguished by its size and linear form. For, while *P. lata* (cfr. Cl. Syn. II, p. 81) is said to attain a length of 0,13 mm., the specimen in question would when complete measure at least 0,192 mm. Unfortunately I have only succeeded in finding this incomplete specimen; it occurred in a gathering from Kvanhaugen (Syderö).

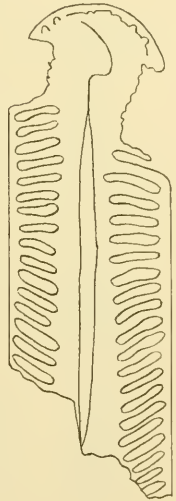


Fig. 38.

120. *P. alpina* W. Sm., Donk. Br. Diat. tab. IV, fig. 6.

Found dispersed in the gatherings as the preceding species, but not in great numbers. Plankton.

Tabellariæ Cl. Syn. II, p. 81.

121. *Pinnularia stauroptera* Grun., Donk. Br. Diat. tab. XII, fig. 3.

Trangisvaag, Kvalbø (Syderö); Højvig (Strömö).

Var. *interrupta* Cl., V. H. Syn. tab. VI, figs. 6—7.

Næs (Österö); Kirkebökamp (Strömö).

122. *P. stomatophora* Grun., A. S. Atl. tab. XLIV, figs. 27—29.

Found dispersed, but not rare.

In a gathering from Trangisvaag a *P. stomatophora* occurred in which the transapical fascia was reduced to a very narrow area, formed by the absence of a single stria on each side of the central nodule, and thus it forms a transitional form to *f. continua* Cl.

123. *P. mesogongyla* Ehr., Cl. Vega Exp. tab. XXXVI, fig. 20.

Trangisvaag (Syderö).

Brevistriatae Cl. Syn. II, p. 85.

124. *Pinnularia brevicostata* Cl., Cl. Diat. Finl. tab. I, fig. 5.

Thorshavn (Strömö).

125. *P. acrosphæria* Bréb. forma *genuina*, A. S. Atl. tab. XLIII, fig. 16.

Nolsö; Kirkebökamp, Thorshavn (Strömö); Trangisvaag (Syderö). Rather rare in gatherings from these localities.

126. *P. nodosa* Ehr. forma *genuina*, A. S. Atl. tab. XLV, figs. 57—58.

Kvanhaugen (Syderö).

127. *P. parva* (Ehr.) Greg. var. *Lagerstedtii* Cl., Lgst. Spetsb. tab. II, fig. 4.

Rather rare. Tværaa, Trangisvaag (Syderö).

Majores Cl. Syn. II, p. 88.

128. *Pinnularia major* Kütz., V. H. Syn. tab. V, fig. 3, A. S. Atl. tab. XLII, fig. 8.

Not rare. Plankton.

129. *P. Dactylus* Ehr., A. S. Atl. tab. XLII, figs. 3, 4, 6.

Here and there. Common in a gathering labelled: »Algæ from a stream at the head of Trangisvaagfjord» (Syderö).

Complexæ Cl. Syn. II, p. 90.

130. *Pinnularia viridis* Nitzsch, V. H. Syn. tab. V, fig. 5.

Var. *intermedia* Cl., A. S. Atl. tab. XLII, figs. 9—10.

Var. *commutata* Grun., W. Sm. Syn. tab. XVIII, fig. 163 a.

Var. *leptogongyla* (Ehr.?) Grun., Donk. Br. Diat. tab. XII, fig. 4.

Var. *rupestris* Hantzsch, A. S. tab. XLV, fig. 44.

Scattered about in the whole of the material, the varieties mixed together with the main species.

131. *P. distinguenda* Cl., Cl. Diat. Finl. tab. I, fig. 1.

Plankton from »the mouth of Sandsvatn» (Sandö).

132. *P. gentilis* Donk., A. S. Atl. tab. XLII, fig. 2.

Here and there. Not rare in a gathering from Næs (Österö).

133. *P. nobilis* Ehr., V. H. Syn. tab. V, fig. 2.

Here and there.

134. *P. streptoraphe* Cl. var. *subconstricta* m. Fig. 39^{660/1}.

L. 0,102 mm., B., greatest, 0,017 mm.; in the middle 0,015 mm. Striæ 6—7 in 0,01 mm.

Differs from the typical *P. streptoraphe* in being slightly constricted in the middle.

Nolsö.

135. *P. isostauron* (Ehr.?) Grun., Cl. & Grun. arc. D. tab. I, fig. 14.

Not common. Nolsö.

Marinae Cl. Syn. II, p. 94.

136. *Pinnularia cruciformis* Donk. var. *Færøensis* m. Fig. 40^{660/1}.

L. 0,029 mm., L. 0,01 mm. Striæ 10 in 0,01 mm.

Valve oval, almost linear; apices obtuse, truncate. Striæ radiant in the middle, convergent towards the apices. Transapical area rather broad. This variety comes nearest to *P. cruciformis* Donk. var. *brevior* Cl. (Vega Exp. tab. XXXV, fig. 18), but it is comparatively broader, more linear, and the striæ are more distant.

Arge (Strömö); Trangisvaag (Syderö).

P. sp. forma anormalis. Fig. 41^{660/1}.

Found in a gathering from Nolsö.

AMPHORA Ehr. 1840. Cl. Syn. II, p. 99.

137. *Amphora ovalis* Kütz. var. *libyca* Ehr., V. H. Syn. tab. I, fig. 2.

Found in several of the gatherings, but always only in small quantities.

138. *A. perpusilla* Grun., V. H. Syn. tab. I, figs. 8—9.

Here and there.

Halamphora Cl. Syn. II, p. 117.

139. *Amphora acutiuscula* Kütz., V. H. Syn. tab. I, fig. 18.

Rather rare. Trangisvaag (Syderö); Sand (Sandö).

140. *A. Terroris* Ehr., A. S. Atl. tab. XXV, fig. 18.

Rare. Trangisvaag (Syderö).

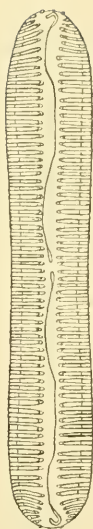


Fig. 39.



Fig. 40.

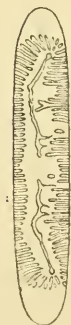


Fig. 41.

MASTOGLOIA Thwaites 1848. Cl. Syn. II, p. 142.

141. *Mastogloia Smithii* Thw. var. *lacustris* Grun., V. H. Syn. tab. IV, fig. 14.

Rare. Ejde (Strömö).

Var. *amphicephala* Grun., V. H. l. c., fig. 27.

Örnefjæld, Trangisvaag, Frodebö (Syderö); Sand (Sandö).

142. *M. elliptica* Ag., A. S. Atl. tab. CLXXXV, fig. 19.

Ejde (Österö).

Var. *punctata* Cl.

Rare. Thorshavn (Strömö).

ACHNANTHÆ Cl. Syn. II, p. 163.

Rhoicosphenia Grun. 1860. Cl. Syn. II, p. 163.

143. *Rhoicosphenia curvata* Kütz., V. H. Syn. tab. XXVI, figs. 1—3. Hestö; Nordreöer. Plankton.

Cocconeis (Ehr.) Cl. Syn. II, p. 168.

144. *Cocconeis Pediculus* Ehr., V. H. Syn. tab. XXX, figs. 28—30. Here and there.

A *Cocconeis* which appears in a gathering from Kvanhaugen (Syderö) must, as far as I can see, be regarded as a variety of *C. Pediculus* Ehr. As it, however, does not quite agree with any of the figures which Cleve refers to this species, I have given a figure of it in fig. 42 (⁶⁶⁰/₁). L. 0,022 mm., B. 0,01 mm. Striæ 15—20 in 0,01 mm. On the hypotheca the striæ are only visible at the margin.

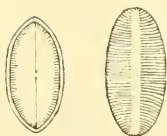


Fig. 42.

145. *C. Scutellum* Ehr., V. H. Syn. tab. XXIX, figs. 1—2. Trangisvaag (Syderö).

Eucoconeis Cl. Syn. II, p. 172.

146. *Cocconeis flexella* Kütz., V. H. Syn. tab. XXVI, figs. 29—31. Not rare. Plankton.

In a gathering from Sand I found a form which excepting its size corresponds exactly to *Achnantheidium maximum* A. Cl. (A. Cl. Lule Lapm. fig. 23), and as in *A. maximum* the pseudoraphe in almost rectilinear. L. 0,046 mm., B. 0,015 mm. I only saw the epitheca.

147. *C. minuta* Cl., Lgst. Spetsb. tab. II, fig. 16.

Here and there together with the above-mentioned.

Var. *alpestris* Br., Le Diatomiste II, tab. V, fig. 15.

Rare. Örnefjæld (Syderö); Thorshavn (Strömö).

Heteroneis Cl. Syn. II, p. 182.

148. *Achnanthes gibberula* Grun., V. H. Syn. tab. XXVII, figs. 47—49.

Kirkebökamp (Strömö).

149. *A. Liljeborgii* Grun., Le Diatomiste II tab. III, fig. 19.

Plankton from Sörvaagsvatn (Vaagö). Only one example of the epitheca was found. As it does not exactly correspond to the above-mentioned figure of Cleve I have given a figure of it in fig. 43 (⁶⁶⁰/1).



Fig. 43.

Microneis Cl. Syn. II, p. 187.

150. *Achnanthes minutissima* Kütz., V. H. Syn. tab. XXVII, figs. 35—38.

Var. *cryptocephala* Grun., V. H. l. c., figs. 41—44.

The main species as well as the variety are rather common in many of the gatherings. In one gathering from Örneffjæld (Syderö) the var. *cryptocephala* occurs most frequently.

151. *A. linearis* W. Sm. var. *pusilla* Grun., V. H. Syn. tab. XXVII, fig. 33.

Thorshavn (Strömö).

152. *A. delicatula* Kütz., V. H. Syn. tab. XXVII, figs. 3—4.

Midvaag (Vaagö); Trangisvaag (Syderö).

Achnanthidium (Kütz. 1844) Heib. 1863. Cl. Syn. II, p. 191.

153. *Achnanthes lanceolata* Bréb., V. H. Syn. tab. XXVII, figs. 8—11.

Not rare in many of the gatherings. Occurs abundantly in a gathering labelled: »Algæ in slowly running water near Bosdalafo» (Vaagö).

Var. *Færoensis* m. Fig. 44 ⁶⁶⁰/1.

L. c. 0,03 mm., B. 0,007—0,008 mm. Striae about 12 in 0,01 mm.

Valves narrow, lanceolate; epitheca with horseshoe-like mark; hypotheca with transapical fascia nearly reaching the margin. Otherwise both the valves of about the same form and size.



Fig. 44.

Not rare in some of the gatherings. Occurs rather abundantly in a gathering labelled: »Algæ in slowly running water near Bosdalafo» (Vaagö).

154. **A. coarctata** Bréb., Lgst. Spetsb. tab. I, fig. 16.

Here and there, but in the gatherings in which they occur, generally occurring in a few examples only. Plankton.

155. **A. brevipes** Ag. var. **intermedia** Kütz., V. H. Syn. tab. XXVI, figs. 21—22.

Rare. Midvaag (Vaagö).

EPITHEMIA Bréb. 1838. V. H. Syn., p. 138.

156. **Epithemia turgida** (Ehr.) Kütz., V. H. Syn. tab. XXXI, figs. 1—2.

Here and there.

Var. **Westermannii** Kütz., V. H. l. c., fig. 8.

Var. **granulata** Grun., V. H. l. c., figs. 5—6.

Both the varieties intermingled with the main species.

157. **E. Sorex** Kütz., V. H. Syn. tab. XXXII, figs. 7—8.

Trangisvaag (Syderö); Nordreöer. In a gathering from the latter locality this species occurs in considerable quantity. Plankton.

158. **E. Argus** Kütz., V. H. Syn. tab. XXXI, figs. 15—17.

Here and there.

159. **E. Zebra** (Ehr.) Kütz., V. H. Syn. tab. XXXI, figs. 9, 11—14.

Not rare in many of the gatherings.

Var. **proboscidea** Grun., V. H. l. c., fig. 10.

Trangisvaag (Syderö).

Var. **longicornis** M. Per. et. F. Herib., Herib. Diat. d'Auv. tab. III, fig. 13.

Selletræ (Österö).

Var. **longissima** M. Per. et. F. Herib., Herib. l. c., fig. 14.

Nordreöer.

160. **E. sp.** Fig. 45 ⁶⁶⁰/₁.

L. 0,06 mm., B. 0,012 mm. Costæ 11—12 in 0,01 mm.

Dorsal side of valve irregularly undulated. Costæ slightly radiant alternating with a — as far as I can see — double row of exceedingly small puncta. As I have seen one example only, and have not seen this form from the pleura-side I have not felt justified in introducing it as a new species.

Grothusvatn near Sand (Sandö).



Fig. 45.

RHOPALODIA O. Müller. Engl. Bot. Jahrb. XXII, 1895.

161. *Rhopalodia gibba* (Kütz.) O. M., V. H. Syn. tab. XXXII, figs. 1—2.

Not rare in many of the gatherings I have had for examination.

162. *R. ventricosa* (Grun.) O. M., V. H. Syn. tab. XXXII, figs. 4—5.

Frequently intermingled with the above.

163. *R. parallela* (Grun.) O. M., V. H. Syn. tab. XXXII, fig. 3.

Here and there mixed with the two above-mentioned. A short form of *R. parallela* appeared in a gathering labelled: »Algæ, ravine near Vaag« (Syderö).

164. *R. gibberula* (Ehr.) var. *rupestris* (Grun.) O. M., Sm. Syn. tab. I, fig. 12.

Not rare, but never in large quantities in any of the gatherings.

EUNOTIA Ehr. 1837. V. H. Syn., p. 141.

165. *Eunotia Arcus* Ehr., V. H. Syn. tab. XXXIV, fig. 2.

Kirkebökamp (Strömö).

Var. *uncinata* Grun., V. H. l. c., fig. 13.

Thorshavn (Strömö).

Var. *bidens* Grun., V. H. l. c., fig. 7.

Thorshavn, Kirkebökamp (Strömö).

166. *E. impressa* Ehr. var. *angusta* Grun., V. H. Syn. tab. XXXV, fig. 1.

Kvalbø (Syderö).

167. *E. major* (W. Sm.) Rabh., V. H. Syn. tab. XXXIV, fig. 14.

Here and there.

Var. *bidens* (Greg.) W. Sm., V. H. l. c., fig. 15.

Thorshavn (Strömö).

168. *E. gracilis* (Ehr.) Rabh., W. Sm. Syn. tab. XXXIII, fig. 285.

Not rare.

169. *E. exigua* Bréb., V. H. Syn. tab. XXXIV, fig. 11.

Not rare, but generally occurs only in small quantities in the gatherings.

170. *E. Nymmanniana* Grun., V. H. Syn. tab. XXXIV, fig. 8.

Not rare in a gathering from Højvig (Strömö).

171. *E. pectinalis* (Kütz.) Rbh., V. H. Syn. tab. XXXIII, figs. 15—16.

Found scattered about in many of the gatherings. A single gathering from Vatsdal (Syderö) consists almost exclusively of this species.

Var. *stricta* Rbh., V. H. l. c., fig. 18.

Var. *minor* Rbh., V. H. l. c., figs. 20—21.

These two varieties occur rather often mixed with the main species. The form *Himantidium Soleirolii* Kütz. W. Sm. Syn. tab. XXXIII, fig. 282 b' occurs rather often intermingled with the typical form and forming parts of the bands.



Fig. 46.

In fig. 46 (⁶⁶⁰/₁) I have figured an *Eunotia* which I found in a gathering labelled: «Freshwater algæ from a stream near «Kedlerne» near Thorshavn». L. 0,044 mm., B. 0,01 mm. Striæ 15 in 0,01 mm., delicate, transversely lineate, radiant, in the middle more distant. Terminal nodules situated at the ventral side. This somewhat short and proportionally broad form perhaps ought most properly to be regarded as a variety either of *E. monodon* Ehr. or of *E. pectinalis*. In Lule Lapm. p. 31 A. Cleve mentions an *E. pect.* var. *compacta* which with regard to its dimensions agrees fairly well with the species in question; it is not figured.

172. *E. incisa* Greg., V. H. Syn. tab. XXXIV, fig. 35 a.

Here and there.

Var. *obtusiuscula* Grun., V. H. l. c., fig. 35 b.

Sand (Sandö).

173. *E. tridentula* Ehr. var.? *perminuta* Grun., V. H. Syn. tab. XXXIV, figs. 29—30.

Kirkebökamp (Strömö); Sandö Bæk (Sandö).

174. *E. prærupta* Ehr., V. H. Syn. tab. XXXIV, fig. 19.

Rare. Kirkebökamp (Sandö).

Forma *curta*, V. H. l. c., fig. 24.

Occurs in several of the gatherings, but always only sparingly.

Var. *bidens* Grun., V. H. l. c., fig. 20.

Here and there, mixed with the above.

175. *E. robusta* Ralfs var. *Papilio* Grun., V. H. Syn. tab. XXXIII, fig. 8.

Kirkebökamp (Strömö); Trangisvaag (Syderö). Only a few examples from both places.

Var. *Diadema* (Ehr.) Ralfs, V. H. l. c., fig. 12.

Örnefjæld (Syderö); Næs (Österö); Sand (Sandö). As the above, sparingly only.

176. *E. Triodon* Ehr., V. H. Syn. tab. XXXIII, fig. 9.

Rare. Klakken (Bordö).

177. *E. Diodon* Ehr., V. H. Syn. tab. XXXIII, fig. 6.

Kirkebøkkamp, Thorshavn, Højvig (Strømø).

Forma *minor*, V. H. l. c., fig. 5.

Gjerdumrejn (Bordø).

178. *E. lunaris* (Ehr.) Grun., V. H. Syn. tab. XXXV, figs. 3—4.

Here and there.

179. *E. flexuosa* (Kütz.) var. *pachycephala* Grun., V. H. Syn. tab. XXXV, fig. 7.

Rare. Svartafos (Strømø), Ejde (Østerø).

CERATONEIS Ehr. 1840. V. H. Syn., p. 148.

180. *Ceratoneis Arcus* Kütz., V. H. Syn. tab. XXXVII, fig. 7.

Not rare in many of the gatherings, one from Bosdalafos (Vaagø) consists mainly of this species.

SYNEDRA Ehr. 1831. V. H. Syn., p. 149.

181. *Synedra pulchella* Kütz., V. H. Syn. tab. XL, fig. 27.

Here and there. Plankton.

Var. *Smithii* Ralfs, V. H. Syn. tab. XLI, fig. 4.

Nolsø; Bosdalafos (Vaagø).

Var. *lanceolata* O'Meara, V. H. l. c., fig. 7.

Hestø; Trangisvaag (Syderø).

182. *S. Ulna* (Nitzsch.) Ehr., V. H. Syn. tab. XXXVIII, fig. 7.

Var. *danica* Kütz., V. H. l. c., fig. 14 a and b.

Var. *vitrea* Kütz., V. H. l. c., fig. 12.

Synedra Ulna is one of the commonest Diatoms of the Færøes; most frequent is the variety *danica*, fig. 14 a of Van Heurck. It occurs abundantly in several of the gatherings, e. g. from Trangisvaag (Syderø), Vedvig (Viderø), Vestmanhavn and Kirkebøkkamp (Strømø). Plankton.

Var. *contracta* m. Fig. 47 ⁶⁶⁰/₁.

L. 0,112 mm., Br., greatest, 0,075 mm., in the middle 0,06 mm. Striæ 9 in 0,01 mm.

Slightly constricted. Striæ absent from the centre. This variety must doubtless be regarded as a transitional form of *Synedra Goulardii* Bréb. in litt. (Cl. & Grun. arc. Diat. tab. VI, fig. 119), which is, however, shorter and broader. *S. Goulardii* has been found in Buenos Ayres, Porto Rico, Kamchatka and near Jenisei.

Found in a gathering from the Færøes labelled: »Green algæ from a swamp on Nolsø«.



Fig. 47.

183. *S. oxyrynchus* Kütz. var. *undulata* Grun., V. H. Syn. tab. XXXIX, fig. 2.

Hvidenæs (Strömö).

184. *S. Acus* (Kütz.) V. H. Syn. tab. XXXIX, fig. 4.

Kirkeböckamp (Strömö).

185. *S. delicatissima* W. Sm. var. *mesoleja* Grun., V. H. Syn. tab. XXXIX, fig. 6.

Here and there. Rather common in a gathering from Bosdalaños (Vaagö). Plankton.

186. *S. Gaillonii* Ehr., V. H. Syn. tab. XXXIX, fig. 18.

Rare. Trangisvaag (Syderö).

187. *S. austriaca* Grun., V. H. Syn. tab. XXXIX, fig. 16 a and b.

Midvaag (Vaagö).

188. *S. fallax* Grun., V. H. Syn. tab. XXXIX, fig. 16 c.

Kirkeböckamp (Strömö).

189. *S. rumpens* Kütz. var. *fragilaroides* Grun., V. H. Syn. tab. XL, fig. 12.

Tværaa (Syderö); Nolsö; Thórshavn, Kirkeböckamp (Strömö).

These three species undoubtedly comes very near to *Fragilaria intermedia* Grun., V. H. Syn. tab. XLV, figs. 9—11. (Cfr. V. H. Syn. descriptions of tab. XXXIX, XL and XLV).

ASTERIONELLA Hassall 1855. V. H. Syn., p. 154.

190. *Asterionella formosa* Hass., V. H. Syn. tab. LI, figs. 19—20.

Plankton from Sörvaagsvatn (Vaagö).

NITZSCHIA Hassall 1845. Cl. & Grun. arc. Diat., p. 67.

Tryblionella (W. Sm.) Grun. Cl. & Grun. l. c., p. 67.

191. *Nitzschia debilis* Arn. & Ryl., Lgst. Spetsb. tab. II, fig. 3.

Midvaag (Vaagö).

192. *N. Tryblionella* Hantzsch var. *Victoriæ* Grun., V. H. Syn. tab. LVII, fig. 14.

Rare. Hestö.

193. *N. angustata* (W. Sm.) Grun. var. *hantzschoides* m. Fig. 48 ⁶⁶⁰/₁.

L. 0,045 mm., B. 0,007 mm. Striæ 15 in 0,01 mm.

Hantzschia-formed, sometimes nearly linear. Striæ delicate, transversely lineate.

Found dispersed in the material.



Fig. 48.

Apiculatæ Cl. & Grun. l. c., p. 72.

194. *Nitzschia apiculata* (Greg.) Grun., V. H. Syn. tab. LVIII, figs. 26—27.

Not rare in a gathering from Højefjæld (Bordø).

Dubiæ Cl. & Grun. l. c., p. 77.

195. *Nitzschia thermalis* Kütz. var. *minor* Hilse, V. H. Syn. tab. LIX, fig. 22.

Vaags Ejde, Trangisvaag (Syderø).

Bilobatæ Cl. & Grun. l. c., p. 79.

196. *Nitzschia bilobata* W. Sm. var. *minor* Grun., V. H. Syn. tab. LX, figs. 2—3.

Here and there, but never in large quantity in any of the gatherings.

Grunovia Cl. & Grun. l. c., p. 82.

197. *Nitzschia Denticula* Grun., V. H. tab. LX, fig. 10.

Ørneffjæld (Syderø); Nolsø; Vaag (Vaagø). Not rare in a gathering from the latter locality.

198. *N. sinuata* (W. Sm.) Grun., V. H. Syn. tab. LX, fig. 11.

Here and there.

Dissipatæ Cl. & Grun. l. c., p. 90.

199. *Nitzschia dissipata* (Kütz.) Grun., V. H. Syn. tab. LXIII, fig. 1.

Kirkebøkamp, Thorshavn (Strømø); Midvaag (Vaagø).

Sigmoideæ Cl. & Grun. l. c., p. 90.

200. *Nitzschia vermicularis* (Kütz.) Grun., V. H. Syn. tab. LXIV, fig. 1.

Thorshavn, Kirkebøkamp (Strømø); Ejde (Østerø).

Sigmata Grun. Casp. S., p. 118.

201. *Nitzschia Sigma* W. Sm., V. H. Syn. tab. LXV, fig. 7.

Trangisvaag (Syderø); Bosdalafof (Vaagø).

Var. *rigida* (Kütz.) Grun., V. H. Syn. tab. LXVI, fig. 2.

Rare. Trangisvaag (Syderø).

Var. *diminuta* Grun., V. H. l. c., fig. 9.

Midvaag (Vaagø).

202. *N. Clausii* Hantzsch, V. H. Syn. tab. LXVI, fig. 10.

Midvaag (Vaagø).

Lanceolata Cl. & Grun. arc. Diat., p. 94.

203. *Nitzschia gracilis* Hantzsch., V. H. Syn. tab. LXVIII, figs. 11—12.

Nolsö.

204. *N. Palea* W. Sm., V. H. Syn. tab. LXIX, fig. 22 b.
Kirkebökamp (Strömö); Nolsö; Syderö.

205. *N. Kützingiana* Hilse, V. H. Syn. tab. LXIX, figs. 24—26.
Bosdalaöf (Vaagö).

206. *N. communis* Rbh. var. *abbreviata* Grun., V. H. Syn. tab. LXIX, fig. 35.

Kirkebökamp (Strömö).

207. *N. Frustulum* (Kütz.) Grun., V. H. Syn. tab. LXVIII, figs. 27—29.

Here and there.

Var. *minutula* Grun., V. H. Syn. tab. LXIX, fig. 5.

Nolsö.

208. *N. Hantzschiana* Rbh., V. H. Syn. tab. LXIX, figs. 1—2.
Nolsö.

Var. *glacialis* Grun., V. H. l. c., fig. 9.

Höjefjæld (Bordö); Nolsö.

HANTZSCHIA Cl. & Grun. arc. Diat., p. 103.

209. *Hantzschia amphioxys* Grun., V. H. Syn. tab. LVI, figs. 1—2.
Rather rare. Nolsö.

Var. *leptocephala* Öst., Öst. Ferskv. Diat. Östg. tab. I, fig. 8.
Rare. Nolsö.

210. *H. elongata* (Hantzsch) Grun., V. H. Syn. tab. LVI, figs. 7—8.

Nolsö.

STENOPTEROBIA Bréb. O. M. Riesengeb., p. 33.

211. *Stenopteroobia anceps* (Lewis) Bréb., O. M. Riesengeb. tab. III, figs. 35—37.

Here and there in a gathering from Trangisvaag (Syderö); single examples in a gathering from Höjvig (Strömö) and in Plankton.

CYMATOPLEURA W. Sm. 1855. V. H. Syn. p. 167.

212. **Cymatopleura Solea** (Bréb.) W. Sm., V. H. Syn. tab. LV, fig. 5.
Rare. Plankton from »the mouth of Sandsvatn» (Sandö).

CAMPYLODISCUS Ehr. 1841. V. H. Syn., p. 189.

213. **Campylodiscus noricus** Ehr., A. S. Atl. tab. LV, fig. 8.
Rare. Plankton from Sörvaagsvatn (Vaagö).

SURIRELLA Turpin 1826. V. H. Syn., p. 186.

214. **Surirella Smithii** Ralfs., W. Sm. Syn. tab. VIII, fig. 59.
Trangisvaag (Syderö).

215. **S. biseriata** Bréb., A. S. Atl. tab. XXII, figs. 12—13 and tab. XXIII, fig. 2.

Scattered about in several of the gatherings. It occurs in great numbers in a gathering from Thorshavn (Strömö) and varies somewhat with regard to its outline.

216. **S. linearis** W. Sm., A. S. Atl. tab. XXIII, figs. 26 and 29, W. Sm. Syn. tab. VIII, fig. 58.

Found dispersed in many of the gatherings, varies somewhat.

217. **S. Lagerheimii** A. Cl., A. Cl. Lule Lapm., fig. 27.

Very rare. Only one example occurred in a gathering from Thors-havn (Strömö).

218. **S. Moelleriana** Grun., A. S. Atl. tab. XXIII, fig. 36 and tab. LVI, figs. 21—23. Fig. 49 ^{660/1}.

L. 0,032—0,066 mm., B. 0,014—0,016 mm.
Striæ 14—15 in 0,01 mm., canaliculi 3 in 0,01 m.

Valve rhombic-lanceolet or linear with apices cunate, in the latter case slightly constricted in the middle.

This characteristic *Surirella* is recorded by A. Schmidt from three localities: Holstein; Pensacola; Scotland: Lodgie Coldstone. As de Toni (Syll. p. 595) mentions it as occurring »ad» Holstein these three localities are doubtless salt or brackish-water localities. From the Færøes it appears scattered about in many of the gatherings and it suits the form figured in A. S. Atl. figs. 21 and 22 on tab. LVI so perfectly that I do not hesitate in placing it under this species.

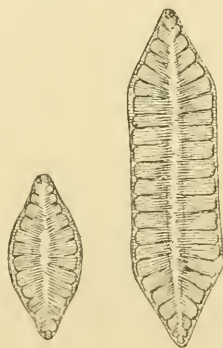


Fig. 49.

219. *S. ovalis* Bréb. var. *ovata* Kütz., V. H. Syn. tab. LXXIII, figs. 5—6.

Found dispersed in the material.

Var. *minuta* Bréb., V. H. l. c., fig. 10.

Lejnum (Strömö).

In a gathering from Bosdalaños (Vaagö) I found a small almost circular *Surirella*, the valve measures 0.02 mm. in length and 0.018 mm. in breadth. The canaliculi — ten on each side — extend far towards the central line, so that the breadth of the area is reduced to 0.004 mm. It corresponds most closely to the form figured in A. S. tab. XXIII, fig. 54 under the name of *S. ovata* Kütz.

220. *S. Brightwellii* W. Sm., A. S. Atl. tab. LVI, figs. 17—18.

Bosdalaños (Vaagö).

Coccochromaticæ.

MERIDION Ag. 1824. V. H. Syn. p. 161.

221. *Meridion circulare* Ag., V. H. Syn. tab. LI, figs. 10—15.

Scattered about in many of the gatherings, but never in large quantity.

DENTICULA Kütz. 1844. V. H. Syn., p. 159.

222. *Denticula tenuis* Kütz. var. *frigida* Grun., V. H. Syn. tab. XLIX, figs. 35—38.

Plankton from Sörvaagsvatn (Vaagö).

DIATOMA De Cand. 1805. V. H. Syn., p. 159.

223. *Diatoma elongatum* Ag., W. Sm. Syn. tab. XLI, fig. 311, V. H. Syn. tab. L, figs. 14, 18—22.

Scattered about in many of the gatherings. In one from Skopen (Sandö) more common. Varies somewhat in size. Plankton.

224. *D. hiemale* (Lyngb.) Heib., V. H. Syn. tab. LI, figs. 1—2.

Var. *mesodon* Kütz., V. H. l. c., figs. 3—4.

Very common in the material I have had for examination. Several of the gatherings, e. g. from Klakken (Bordö), Nolsö and Sandö Bæk (Sandö) consist mainly of this species. The variety occurs intermingled with the main species.

FRAGILARIA Lyngbye 1819. V. H. Syn., p. 155.

225. *Fragilaria virescens* Ralfs, V. H. Syn. tab. XLIV, fig. 1.

Not rare. In gatherings from Skjælling (Strömö) and Nolsö, common.

Var. *exigua* Grun., V. H. l. c., figs. 2—3.

Kirkebøkamp (Strömö).

Var. *subsalina* Grun., V. H. l. c., fig. 5.

Sand (Sandö).

226. *F. undata* W. Sm., V. H. Syn. tab. XLIV, fig. 9.

Næs (Österö); Sand (Sandö); Trangisvaag (Syderö).

227. *F. capucina* Desm., V. H. Syn. tab. XLV, fig. 3.

Var. *acuta* Grun., V. H. l. c., fig. 4.

Var. *lanceolata* Grun., V. H. l. c., fig. 5.

Not rare in many of the gatherings. The varieties, however — especially *lanceolata* — occur almost as frequently as the main species.

228. *F. intermedia* Grun., V. H. Syn. tab. XLV, figs. 9—11.

Not rare in several of the gatherings. In some gatherings, e. g. from Trangisvaag, Kvanhaugen (Syderö) and Thorshavn (Strömö), common.

229. *F. æqualis* Hub. var. *producta* Lgst., Lgst. Spetsb. tab. I, fig. 1.

Kirkebøkamp (Strömö); Klaksvig (Bordö).

230. *F. mutabilis* (W. Sm.) Grun., V. H. Syn. tab. XLV, fig. 12.

Nolsö.

Var. *elliptica* Schum., V. H. l. c., figs. 15—17.

Here and there.

231. *F. construens* (Ehr.) Grun. var. *Venter* Grun., V. H. Syn. tab. XLV, fig. 26.

Plankton from Sörvaagsvatn (Vaagö).

232. *F. parasitica* (W. Sm.) Grun., W. Sm. Syn. tab. LX, fig. 375.

Kirkebøkamp (Strömö).

233. *F. pacifica* Grun., V. H. Syn. tab. XLIV, fig. 22.

Trangisvaag, Kvalbøejde (Syderö); Hestö.

234. *F. lævissima* Cl. var. *undulata* m. Fig. 50 ^{660/1}, cfr.

Cl. Fz. Jos. L. p. 9, fig. 9.

L. 0,018 m., B. 0,005 m.

In »Diatoms from Franz-Josef Land« P. T. Cleve mentions a new *Fragilaria*, L. 0,011—0,016 mm., B. 0,004 mm. He names it *F. lævissima* as he has not seen any transverse striae. It has been found »abundant in one sample fra Cape Flora«. Through the kindness of Professor Cleve it has been possible for me to compare the form found here with the original specimens of *F. lævissima* to which it corresponds fairly well, excepting that it is slightly undulated. I have just been able to catch a glimpse of the striae, they are exceedingly delicate and, as is generally the case in *Fragilaria*, are transversely parallel.

In a gathering from Høje fjæld on Bordö, rather rare.

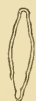


Fig. 50.

PERONIA Bréb. & Arn. 1868. V. H. Syn., p. 145.

235. *Peronia erinacea* Bréb. & Arn., V. H. Syn. tab. XXXVI, fig. 19.

Trangisvaag (Syderö); Hestö; Kirkebökamp (Strömö).

TABELLARIA Ehr. 1839. V. H. Syn., p. 162.

236. *Tabellaria fenestrata* (Lyngb.) Kütz., V. H. Syn. tab. LII, figs. 7—8.

Occurs in many of the gatherings, but only exceptionally in large quantities. Plankton.

237. *T. flocculosa* (Roth.) Kütz., V. H. Syn. tab. LII, figs. 10—12.

Very common. In some gatherings, e. g. from Höjefjæld (Bordö) and Svartafos (Strömö), abundant. Plankton.

DIATOMELLA Grev. 1855. De Toni Syll. II, p. 742.

238. *Diatomella Balfouriana* W. Sm., W. Sm. Syn. tab. LXI, fig. 383.

Found dispersed in several of the gatherings. Common in two gatherings only — one from Trangisvaag (Syderö) and one from Höjefjæld (Bordö).

RHABDONEMA Kütz. 1844. V. H. Syn., p. 165.

239. *Rhabdonema arcuatum* (Ag.) Kütz., V. H. Syn. tab. LIV, figs. 14—16.

Rare. Trangisvaag (Syderö).

TETRACYCLUS (Ralfs) Grun. 1862. V. H. Syn., p. 166.

240. *Tetracyclus emarginatus* W. Sm., Herib. Diat. d'Auv. tab. III, fig. 27.

Here and there, but not common in any of the gatherings.

MELOSIRA Ag. 1814. V. H. Syn., p. 197.

241. *Melosira varians* Ag., V. H. Syn. tab. LXXXV, figs. 10, 11 and 14, 15.

Not rare. Common in gatherings from Thorshavn and Kvanhaugen (Syderö); a gathering from Bosdalafos (Vaagö) consisted mainly of it.

242. *M. Roeseana* Rbh., V. H. Syn. tab. LXXXIX, figs. 1—3.

Rather rare and occurring only in a few examples. Nolsö; Vaag (Vaagö); Höjefjæld (Bordö).

243. *M. distans* Kütz. var. *nivalis* W. Sm., V. H. Syn. tab. LXXXVI, figs. 25—27.

Kirkebökamp, Thorshavn (Strömö); Midvaag (Vaagö).

244. *M. crenulata* Kütz., V. H. Syn. tab. LXXXVIII, figs. 3—5, W. Sm. Syn. tab. LIII, fig. 337.

Not rare. Occurs abundantly in gatherings from Hvidenæs (Strömö); Trangisvaag (Syderö) and Bordö.

245. *M. (Paralia) sulcata* (Ehr.) Kütz., W. Sm. Syn. tab. LIII, fig. 338.

Midvaag (Vaagö).

Var. *coronata*, A. S. Atl. tab. CLXXVI, fig. 20.

Rare. Trangisvaag (Syderö).

CYCLOTELLA Kütz. 1833. V. H. Syn., p. 213.

246. *Cyclotella comta* (Ehr.) Kütz. var. *radiosa* Grun., V. H. Syn. tab. XCIII, fig. 2.

Rare. Bosdalafos, Midvaag (Vaagö).

247. *C. antiqva* W. Sm., V. H. Syn. tab. XCII, fig. 1.

Plankton from Sörvaagsvatn (Vaagö).

BIDDULPHIA Greg. 1871. V. H. Syn., p. 203.

248. *Biddulphia aurita* (Lyngb.) Bréb., V. H. Syn. tab. XCVIII, figs. 4—9.

Rare. Trangisvaag (Syderö).

From Lyngbye's Herbarium in the Botanical Gardens, Copenhagen, I have had six sheets for examination and only three of these sheets contained freshwater species and among these the following forms occurred: —

Frustulia vulgaris Thw., V. H. Syn. tab. XVII, fig. 6.

Cymbella ventricosa Kütz., V. H. Syn. tab. III, fig. 14.

— *cymbiformis* (Ag.) Kütz., V. H. Syn. tab. II, fig. 11.

Navicula viridis Kütz. var. *slesvicensis* Grun., V. H. Syn. tab. VII, fig. 26.

Gomphonema geminatum Lyngb., W. Sm. Syn. tab. XXVII, fig. 235.

Achnanthes minutissima Kütz. var. *cryptocephala* Grun., V. H. Syn. tab. XXVII, figs. 41—44.

Eunotia prærupia Ehr. var. *curta* Grun., V. H. Syn. tab. XXXIV, fig. 24.

Synedra Ulna (Nitzsch.) Ehr., V. H. Syn. tab. XXXVIII, fig. 7.

Diatoma elongatum Ag., W. Sm. Syn. tab. XL and XLI, fig. 341.

— *hiemale* (Lyngb.) Heib., V. H. Syn. tab. LI, figs. 1—2.

- Fragilaria virescens* Ralfs, V. H. Syn. tab. XLIV, fig. 1.
 — *intermedia* Grun., V. H. Syn. tab. XLV, fig. 11.
Tabellaria flocculosa Kütz., W. Sm. Syn. tab. XLIII, fig. 316.

The following freshwater species are mentioned in Rostrup's list in Bol. Tidsskr., vol. IV: —

- Surirella ovala* Kütz. Found among *Conferva implexa* from a larger stream on Strömö.
Cocconeis communis Heib. This and all the following Diatoms which are given without habitat were found in a large stream near Thorshavn.
Ceratoneis Arcus (Ehr.) Kütz.
Cymbella variabilis (Cramer) Heib.
Himantidium Arcus (Ehr.) var. *bidens* Ehr.
Epithemia gibba Ehr.
 — *turgida* Kütz. Thorshavn; coast of Skuvö.
 — *Sorex* Kütz.
 — *Zebra* Kütz.
Gomphonema geminatum (Lyngb.) Ag. Has already been recorded by Lyngbye as found in alpine rivers at Arge and Skælling. We found it near Thorshavn.
 — *acuminatum* Ehr. Amongst *Fontinalis* on Vaagö.
Navicula elliptica Kütz.
Tabellaria flocculosa (Rbh.) Kütz. Amongst *Fontinalis* Vaagö, and *Sphagnum*, Strömö.
 — *fenestrata* Kütz. With the above.
Synedra splendens Kütz.
 — *longissima* W. Sm.
Fragilaria pectinalis (Müll.) Lyngb. In stream on aquatic plants. Lyngb.
Diatoma hyemale (Lydgb.) Heib. Here and there in streams. Lyngb. We found it near Thorshavn.
Melosira nivalis W. Sm. Amongst *Sphagnum*, Strömö.
Pinnularia major Rbh. With the above.
 — *alpina* W. Sm. With the two above-mentioned.

In a fragment of *Diatomaceous silex* picked up near Thorshavn and examined by Mr. C. Hansen of Høyer the following Diatoms were found: —

- Epithemia proboscidea* Kütz.
 — *turgida* Kütz.
 — *Zebra* Kütz.
Cymbella variabilis (Cramer) Heib.
Navicula viridis Nitzsch.
 — *acuta* W. Sm.
Tabellaria flocculosa Kütz.
Fragilaria parasitica (W. Sm.) Heib.
Gomphonema geminatum (Lyngb.) Heib.

PHYTO-GEOGRAPHICAL STUDIES

* BASED UPON

THE FRESHWATER DIATOMS

BY

E. OSTRUP.

IN the following table I have enumerated the freshwater forms found in the material from the Færöes and compared them with the freshwater Diatom-flora of other countries. The reason why I have not included about 40 forms from salt and brackish water of which by far the greater part occurs in one single gathering (labelled: »Algæ mixed with *Glyceria maritima*, Trangisvaag») is simply because if they were included we should arrive at a misleading conclusion as to the percentage. Those species which cannot be regarded as rare are marked with an *.

The abbreviations signify: G. Br. = Great Britain. Sc. = The Scandinavian peninsula. R. = Russia. J. M. = Jan Mayen. Sp. = Spitzbergen. F. J. = Franz-Josef Land. E. Gr. = East Greenland. W. Gr. = West Greenland. O. M. = »Die Hochseen des Riesengebirges« investigated by O. Müller. Eu. = Europe, of course exclusive of Great Britain, the Scandinavian peninsula and Russia.

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
1	<i>Caloneis lepidula</i>	-								-	-
2	<i>C. bacillaris</i>	-	-								
3*	<i>C. fasciata</i>	-	-	-	-	-	-			-	-
4*	<i>C. Silicula alpina</i>		-	-	-	-	-	-			-
5*	<i>C. — gibberula</i>	-	-	-					-		
6*	<i>C. — ventricosa</i>	-	-	-			-				-
7	<i>C. alpestris</i>		-							-	-
8	<i>C. obtusa</i>	-	-	-					-	-	-
9*	<i>Neidium bisulcatum</i>	-	-	-		-	-	-	-	-	-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
10*	<i>Neidium affine amphirhynchus</i> ..	-	-	-		-		-	-	-	-
11*	N. — <i>genuina minor</i> ..	-	-	-		-				-	-
12	<i>N. dubium</i>	-	-								-
13	<i>Diploneis interrupta</i>	-	-			-		-	-		-
14*	<i>D. elliptica</i>	-	-	-			-		-		-
15	<i>D. ovalis</i>	-	-	-	-	-	-	-	-		-
16	<i>Gyrosigma acuminatum</i>	-	-								-
17*	<i>Frustulia vulgaris</i>	-	-	-				-		-	-
18*	<i>F. rhomboides</i>	-	-	-				-	-	-	-
19*	F. — <i>saxonica</i>	-	-	-		-				-	-
20*	F. — <i>viridula</i>										-
21	<i>Amphipleura pellucida</i>	-	-	-							-
22*	<i>Navicula Rolavaui</i>		-	-	-	-		-		-	-
23	N. — <i>oblongella</i>						-				
24	<i>N. bacilliformis</i>	-	-	-							-
25	<i>N. Pupula</i>	-	-	-			-	-	-		-
26*	<i>N. contenta biceps</i>						-	-			-
27*	<i>N. perpusilla</i>	-	-	-							
28	<i>N. Semeu</i>	-	-	-			-				-
29	<i>N. integra</i>	-									-
30	<i>N. subtilissima</i>		-	-	-						
31	<i>Stauroneis anceps linearis</i>	-	-	-	-	-		-	-		-
32*	S. — <i>amphicephala</i>	-	-	-	-	-	-				-
33*	<i>S. Phoenicenteron amphilepta</i> ..	-	-	-					-		
34	<i>S. parvula prominula</i>		-							-	-
35	S. — <i>producta</i>		-					-		-	
36	<i>S. Legumen</i>	-								-	-
37	<i>S. Smithii</i>	-	-							-	-
38	<i>S. javanica</i>						-	-			
39	<i>Cymbella microcephala</i>	-	-						-	-	-
40	<i>C. Cesatii</i>	-	-	-				-	-		-
41	<i>C. angustata</i>	-		-				-	-		
42	<i>C. amphicephala</i>	-	-	-				-	-		-
43	<i>C. naviculiformis</i>	-	-	-				-	-		-
44	<i>C. cuspidata</i>	-	-	-					-		-
45	<i>C. turgida</i>	-	-	-				-		-	-
46*	<i>C. ventricosa</i>	-	-	-		-	-	-	-	-	-
47	<i>C. hebridica</i>	-	-	-							

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
48*	<i>Cymbella gracilis</i>	-	-	-				-	-	-	-
49*	<i>C. incerta naviculacea</i>	-	-	-				-	-		
50*	<i>C. arqvialis</i>	-	-					-	-		-
51	<i>C. sinuata</i>	-	-	-							-
52*	<i>C. affinis</i>	-	-			-		-			-
53*	<i>C. parva</i>	-	-	-			-		-		-
54	<i>C. Boettlusi</i>					-		-			
55*	<i>C. cymbiformis</i>	-	-	-							-
56*	<i>C. Cistula</i>	-	-	-		-	-	-	-		-
57*	<i>C. lanceolata</i>	-	-	-		-					-
58*	<i>C. helvetica</i>	-	-	-					-		-
59*	<i>C. aspera</i>	-	-	-			-				-
60*	<i>Gomphonema parvulum</i>	-	-				-			-	-
61*	<i>G. angustata producta</i>	-	-	-		-	-	-		-	-
62*	<i>G. intricatum</i>	-	-	-						-	-
63	<i>G. — dichotoma</i>			-							-
64*	<i>G. gracile naviculacea</i>	-	-							-	-
65	<i>G. lanceolatum insignis</i>	-								-	-
66*	<i>G. subclavatum</i>	-	-	-						-	-
67*	<i>G. — montana</i>	-	-	-						-	-
68*	<i>G. acuminatum coronata</i>	-	-	-							-
69*	<i>G. constrictum</i>	-	-							-	-
70*	<i>G. geminatum</i>	-	-	-		-				-	-
71*	<i>G. olivaceum</i>	-	-							-	-
72*	<i>Anomoeoneis seriatus</i>	-	-	-					-		-
73*	<i>A. brachysira</i>	-	-	-					-	-	-
74*	<i>A. exilis</i>	-	-	-				-	-		-
75*	<i>A. — thermalis</i>									-	-
76	<i>A. zellensis</i>	-		-				-	-		-
77*	<i>Navicula cocconeiformis</i>	-	-	-	-	-	-	-			-
78*	<i>N. cryptocephala</i>	-	-					-	-		-
79	<i>N. — exilis</i>	-						-			-
80	<i>N. rhynchocephala amphicephala</i>	-	-					-			-
81*	<i>N. viridula</i>	-	-	-				-			-
82*	<i>N. — slesvicensis</i>	-	-					-	-		-
83	<i>N. — rostellata</i>	-	-								-
84	<i>N. hungarica</i>	-	-								-
85	<i>N. — capitata</i>	-			-	-	-				-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
86	<i>Navicula cincla</i>	-	-	-			-				-
87	<i>N.</i> — <i>Heufleri</i>		-								-
88*	<i>N.</i> — <i>angusta</i>									-	-
89*	<i>N. radiosa</i>	-	-	-		-		-	-		-
90	<i>N.</i> — <i>lenella</i>		-	-		-		-	-		-
91	<i>N. gracilis</i>		-	-			-				-
92*	<i>N. dicephala</i>	-	-		-						-
93	<i>N.</i> — <i>subcapitata</i>										-
94	<i>N. Gastrum exigua</i>	-	-	-							
95	<i>N. Placentula</i>	-		-							-
96	<i>N. scutelloides minutissima</i>			-				-	-		
97*	<i>N. pusilla</i>	-	-			-	-				-
98	<i>N. amphibola</i>			-							
99	<i>Pinnularia undulata subundulata</i>	-									
100	<i>P. sublinearis</i>				-				-	-	
101	<i>P. leptosoma</i>		-	-			-	-			
102*	<i>P. appendiculata</i>	-	-	-					-		-
103	<i>P. subcapitata</i>	-	-	-		-		-	-	-	-
104*	<i>P. interrupta stauroneiformis</i>	-	-	-					-	-	-
105*	<i>P. mesolepta</i>	-	-	-					-	-	-
106	<i>P.</i> — <i>stauroneiformis</i>		-	-		-		-	-	-	-
107	<i>P.</i> — <i>angusta</i>		-								-
108	<i>P.</i> — <i>polygona</i>	-									-
109*	<i>P. microstauron</i>	-	-	-	-				-	-	-
110	<i>P. lermilina</i>	-									
111*	<i>P. divergentissima</i>		-	-	-	-	-		-		
112	<i>P. Brébissonii</i>	-	-	-	-				-	-	-
113	<i>P.</i> — <i>diminuta</i>	-	-	-	-	-					-
114*	<i>P. Legumen</i>		-								-
115	<i>P. platycephala</i>	-	-	-							-
116*	<i>P. divergens</i>	-	-	-	-					-	-
117	<i>P.</i> — <i>elliptica</i>	-	-	-			-	-		-	
118*	<i>P. intermedia</i>			-	-	-					-
119	<i>P. Balfouriana</i>	-					-				
120*	<i>P. borealis</i>		-	-	-	-	-	-	-	-	-
121*	<i>P. lata</i>	-	-	-	-	-	-	-		-	-
122*	<i>P. alpina</i>	-									-
123*	<i>P. stauroltera</i>	-	-	-						-	-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
124	<i>Pinnularia stauroptera inerrupla</i>	-	-	-			-	-		-	-
125*	<i>P. stomatophora</i>	-	-	-							-
126	<i>P. mesogongyla</i>	-	-	-				-			
127	<i>P. brevicostata</i>		-	-						-	-
128	<i>P. acrosphueria</i>	-	-	-							-
129	<i>P. nodosa</i>	-									-
130	<i>P. parva Lagerstedtii</i>	-				-					
131*	<i>P. major</i>	-	-	-						-	-
132*	<i>P. Dactylus</i>	-	-	-							-
133*	<i>P. viridis</i>	-	-	-						-	-
134*	<i>P. — inlermedia</i>	-	-	-	-			-		-	-
135*	<i>P. — commutata</i>	-	-	-	-			-		-	-
136	<i>P. — leptogongyla</i>	-									
137*	<i>P. — rupestris</i>	-	-	-				-		-	-
138	<i>P. distinguenda</i>	-	-	-							
139*	<i>P. gentilis</i>	-	-	-							
140*	<i>P. nobilis</i>	-	-	-							-
141	<i>P. isostaurou</i>		-	-					-		
142*	<i>Amphora ovalis libyca</i>	-	-	-		-		-	-	-	-
143*	<i>A. perpusilla</i>	-	-	-							-
144	<i>Mastogloia Smilthii lacustris</i>	-	-			-					-
145	<i>M. elliptica punctata</i>		-								
146	<i>Rhoicosphenia curvata</i>	-	-	-			-	-	-		-
147*	<i>Cocconeis pediculus</i>	-	-	-							-
148*	<i>C. flexella</i>	-	-	-		-		-			-
149*	<i>C. minula</i>		-	-		-		-			
150	<i>C. — alpestris</i>		-			-					-
151*	<i>Achnanthes minutissima</i>	-	-	-			-	-			-
152*	<i>A. — cryptocephala</i>		-	-				-			
153	<i>A. linearis pusilla</i>	-	-				-		-		
154	<i>A. delicatula</i>	-							-		-
155*	<i>A. lanceolata</i>	-	-	-							-
156*	<i>A. coarctata</i>	-	-		-	-		-			-
157*	<i>Epithemia turgida</i>	-	-	-							-
158*	<i>E. turgida Westermanni</i>	-	-	-							-
159*	<i>E. — granulata</i>	-	-								-
160*	<i>E. Sorex</i>	-	-	-					-		-
161*	<i>E. Argus</i>	-	-	-							-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
162*	<i>Epithemia Zebra</i>	-	-	-				-			-
163	<i>E. Zebra proboscidea</i>	-	-								-
164	<i>E. — longicornis</i>		-								
165	<i>E. — longissima</i>		-								
166*	<i>Rhopalodia gibba</i>	-	-	-							-
167*	<i>R. ventricosa</i>	-	-								-
168	<i>R. parallela</i>	-	-						-		-
169*	<i>R. gibberula rupestris</i>	-									-
170	<i>Eunolia Arcus</i>	-	-	-		-		-	-	-	-
171	<i>E. — uncinata</i>		-	-					-		-
172	<i>E. — bidens</i>							-		-	-
173	<i>E. impressa angustata</i>	-	-								
174*	<i>E. major</i>	-	-	-							-
175	<i>E. — bidens</i>	-									-
176*	<i>E. gracilis</i>	-	-	-		-		-			-
177*	<i>E. exigua</i>	-		-							-
178	<i>E. Nymmanniana</i>		-	-				-	-		
179*	<i>E. pectinalis</i>	-	-	-						-	-
180*	<i>E. — stricta</i>		-								
181*	<i>E. — minor</i>	-	-	-							
182*	<i>E. incisa</i>	-	-	-				-		-	-
183	<i>E. — obtusiuscula</i>	-	-								
184	<i>E. tridentula perminula</i>	-	-					-	-		-
185	<i>E. prærupta</i>							-	-	-	-
186	<i>E. — curta</i>		-				-	-	-		
187*	<i>E. — bidens</i>	-	-	-				-	-	-	-
188	<i>E. robusta Papilis</i>			-	-	-		-		-	-
189	<i>E. — Diadema</i>	-	-							-	-
190	<i>E. Triodon</i>	-	-	-				-	-		-
191*	<i>E. Diodon</i>	-	-	-				-	-		-
192	<i>E. — minor</i>		-							-	-
193*	<i>E. lunaris</i>	-	-	-				-	-	-	-
194	<i>E. flexuosa pachycephala</i>										-
195*	<i>Ceraloneis arcus</i>	-	-			-	-			-	-
196*	<i>Sguedra pulchella</i>	-	-	-				-	-		-
197	<i>S. — Smilhi</i>	-	-						-		-
198	<i>S. — lanceolata</i>	-							-		-
199*	<i>S. Ulua</i>	-	-								-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	Eu.
200*	<i>Syngedra Ulua danica</i>	-	-					-			-
201*	S. — <i>vitrea</i>		-								-
202	<i>S. oxyrhynchus undulata</i>										-
203	<i>S. Acus</i>	-	-								-
204*	<i>S. delicatissima mesoleja</i>										
205	<i>S. Austriaca</i>										-
206	<i>S. fallax</i>										-
207	<i>S. rumpens fragilaroides</i>										
208	<i>Asterionella formosa</i>	-	-	-							-
209	<i>Nitzschia debilis</i>	-				-	-		-		-
210	<i>N. Tryblionella Victoriae</i>										-
211*	<i>N. angustata</i>	-	-	-							-
212	<i>N. apiculata</i>	-	-	-					-		-
213	<i>N. thermalis minor</i>			-				-	-		-
214	<i>N. bitobata minor</i>				-						
215*	<i>N. Denticula</i>	-	-	-		-		-	-		-
216*	<i>N. sinuata</i>	-	-	-		-					-
217	<i>N. dissipata</i>			-		-					-
218	<i>N. pernicularis</i>	-						-			-
219	<i>N. Sigma diminuta</i>		-					-			-
220	<i>N. Clausii</i>						-				-
221	<i>N. gracilis</i>										-
222*	<i>N. Palea</i>	-		-	-		-	-			
223	<i>N. Kützingeriana</i>			-							-
224	<i>N. communis abbreviata</i>		-	-							-
225*	<i>N. Frustulum</i>			-	-		-				-
226	N. — <i>minutula</i>										-
227	<i>N. Hantzschiana</i>		-	-		-	-				
228	N. — <i>glacialis</i>		-								-
229	<i>Hantzschia amphioxys</i>	-	-	-	-	-	-	-		-	-
230	H. — <i>leptocephala</i>							-			
231	H. — <i>elongata</i>		-								-
232	<i>Stenopterobia anceps</i>		-	-					-	-	-
233	<i>Cymatopleura Solea</i>	-	-	-							-
234	<i>Campylodiscus noricus</i>	-	-	-							-
235	<i>Surirella Smithii</i>	-									-
236*	<i>S. biseriala</i>	-	-	-						-	-
237*	<i>S. linearis</i>	-	-	-		-			-	-	-

No.	Names	G. Br.	Sc.	R.	J. M.	Sp.	F. J.	E. Gr.	W. Gr.	O. M.	En.
238	<i>Surirella Lagerheimii</i>		-								
239*	<i>S. ovalis ovala</i>	-	-	-		-		-			-
240	<i>S. — Brightwellii</i>	-									-
241	<i>S. — minuta</i>	-									-
242*	<i>Meridion circulare</i>	-	-	-	-	-	-	-	-		-
243	<i>Denticula lennis frigida</i>	-	-	-				-	-		-
244*	<i>Dialoma elongatum</i>	-	-	-		-			-		-
245*	<i>D. hiemale</i>	-	-								-
246*	<i>D. — mesodon</i>	-	-	-					-	-	-
247*	<i>Fragilaria virescens</i>	-	-	-		-			-	-	-
248	<i>F. — — exigua</i>	-							-		
249	<i>F. undata</i>	-	-	-					-	-	-
250*	<i>F. capucina</i>	-	-	-		-		-			-
251*	<i>F. — acuta</i>	-	-	-							-
252*	<i>F. — lanceolata</i>									-	-
253*	<i>F. intermedia</i>		-							-	-
254	<i>F. æqualis producta</i>					-					
255	<i>F. mutabilis</i> ..	-	-						-		-
256	<i>F. — elliptica</i>		-								
257	<i>F. construens</i> Venler	-							-		-
258	<i>F. parasilica</i>	-	-								-
259	<i>Peronia erinacea</i> ..	-	-							-	-
260*	<i>Tabellaria fenestrata</i>	-	-	-				-			-
261*	<i>T. flocculosa</i>	-	-	-		-	-	-	-	-	-
262*	<i>Diatomella Balfouriana</i>	-	-	-	-	-		-			-
263*	<i>Tetracyclus emarginatus</i>	-	-								
264*	<i>Melosira varians</i>	-	-	-							-
265	<i>M. Roeseana</i>	-	-	-		-					-
266*	<i>M. distans nivalis</i>	-	-			-		-		-	-
267*	<i>M. crenulata</i>	-	-	-							-
268	<i>Cyclotella comta radiosa</i>	-	-	-							-
269	<i>C. antiqua</i>	-	-			-		-	-		-
269	Total	197	213	158	31	67	52	96	91	91	224
130	Of these: not rare	108	116	97	20	40	29	54	43	57	120

If we now compare the species and varieties included in the above table, then with regard to the total sum of freshwater forms the result we arrive at is, that the Færøes have all in all 269 species

common with Europe	224 = 83 %
— — Scandinavia	213 = 79 %
— — Great Britain	197 = 73 %
— — Russia	158 = 59 %
— — East Greenland	96 = 36 %
— — West Greenland	91 = 34 %
— — Riesengebirge	91 = 34 %
— — Spitzbergen	67 = 25 %
— — Franz-Josef Land	52 = 19 %
— — Jan Mayen	31 = 12 %.

If we only compare those forms which cannot be regarded as rare, but which, however, are frequently found dispersed in the Færøese material¹ then it gives the following result: —

Of 130 not rare forms the Færøes have

common with Europe	120 = 92 %
— — Scandinavia	116 = 89 %
— — Great Britain	108 = 83 %
— — Russia	97 = 75 %
— — Riesengebirge	57 = 44 %
— — East Greenland	54 = 42 %
— — West Greenland	43 = 33 %
— — Spitzbergen	40 = 30 %
— — Franz-Josef Land	29 = 22 %
— — Jan Mayen	20 = 15 %.

Both these comparisons show then that the Diatom flora of the Færøes has a European, especially North European character, but on the other hand it cannot be regarded as arctic or decidedly alpine.

As the Færøes, however, are a group of islands, formed exclusively of rocks, which sometimes attain a rather considerable height, it seems natural to inquire whether the Diatom flora may not have a subalpine character, and the five small ponds in Riesengebirge investigated by Dr. Otto Müller have afforded suitable material

¹ In the table such forms are marked with an *.

for comparison. These ponds are situated about 1200 metres above sea-level, and during the summer the temperature may be as low as $5,5^{\circ}$ C. and the warmest rarely more than $12,5^{\circ}$ C. Otto Müller has found 193 species, and 91 — e. g. about one half — of them occur in the Færøes, constituting 34% of the entire number of the Færøese species. Of the 130 more common Færøese species $57 = 44\%$ occur in Riesengebirge, but only $42 = 32\%$ are common in Riesengebirge, constituting 22% of the species found in Riesengebirge. This then shows that according to the percentage the Færøese flora does not appear to be of particularly subalpine character. If we now compare the genera which characterize both localities then we shall arrive at the following conclusion: —

Very common in the Færøes are: *Synedra Ulna*, *Tabellaria flocculosa* and *Diatoma hiemale*. Frequent are different forms of *Fragilaria*, *Tabellaria fenestrata*, *Eunotiae* and *Melosira (crenulata)*, the latter generally occurs abundantly wherever it is found. Further of *Naviculaceae*: *Frustulia*, *Cymbella*, *Gomphonema*, *Anomoeoneis* and small *Achnanthes*. *Pinnularia* are rather frequently met with, but seldom occur in considerable quantity in any of the gatherings. *Ceratoneis Arcus* and *Rhopalodia gibba* are both frequent. Of these forms, characteristic of the Færøese material, *Synedra* is quite wanting in Otto Müller's list, *Cymbella* (excepting *C. ventricosa*) are poorly represented, *Gomphonema*, *Achnanthes* and *Epithemia* not common. *Tabellaria flocculosa* and *Diatoma hiemale* are frequent in gatherings from two of the ponds; *Fragilaria virescens* and *capucina* frequent, also *Surirella* and *Anomoeoneis*. *Pinnularia* abundant. The most characteristic difference then is this, that *Synedra*, *Gomphonema*, *Cymbella* and *Achnanthes* are, so to say, absent in Riesengebirge. As, moreover, the remaining species do not correspond very closely it cannot be said that the Diatom-flora of the Færøes taken as a whole is subalpine. If on the other hand we compare the Færøes with Lule-Lappmark then the resemblance will prove to be greater. In Lule-Lappmark the following genera are richly represented: *Pinnularia*, *Frustulia*, *Cymbella*, *Gomphonema*, *Eunotia* and *Tabellaria*. These genera are also numerous in the Færøes, while *Synedra* which is extremely conspicuous here occurs only occasionally among the Diatoms of Lule-Lappmark. A. Cleve mentions the following genera as absent (o) or sparsely represented in Lule-Lappmark: *Amphora*, *Pleurosigma* (o), *Cocconeis*, *Rhoicosphenia* (o), *Surirella*, *Cymatopleura* (o), *Campylodiscus* (o), *Epithemia* and *Stephanodiscus*.

Of these *Stephanodiscus* is absent in the Færøes; of *Pleurosigma*, *Cymatopleura* and *Campylodiscus* I have only occasionally met with a solitary specimen; *Amphora*, *Cocconeis* and *Rhoicosphenia* occur at intervals; *Surirella* and *Epithemia* are not rare. In the Færøes I have found a specimen of *Surirella Lagerheimii* which has hitherto only been known from Lule-Lappmark.

If we now ask, whether also in the Færøes there is a great difference in the gatherings from the different localities, then the answer will be that taken as a whole the material is fairly homogeneous, sometimes, however, several species predominate in different gatherings.

In five gatherings labelled »waterfall« I have noticed the following more conspicuous species: —

Bosdalaños (Vaagö), 3 gatherings.

In No. 1: *Ceratoneis Arcus* main part; *Synedra delicatissima mesoleja*, *Fragilaria capucina* common; *Diatoma tenue*, *Gomphonema angustata producta*, *Cymbella affinis*, *Synedra Ulna* not rare.

In No. 2: *Melosira varians* main part; *Nitzschia Palea*, *Cymbella ventricosa* not rare.

In No. 3: no Diatoms.

Trangisvaag (Syderö).

Epithemia Zebra, *Rhopalodia gibba* common.

Svartafos (Strömö).

Tabellaria flocculosa.

In gatherings from different heights. (The heights are particularly mentioned on the gatherings.)

100 metres, 3 gatherings: *Tabellaria flocculosa*, *Anomoeoneis brachysira*, *A. exilis*, *Frustulia viridula*, *Achnanthes minutissima cryptocephala*.

200 metres, 2 gatherings: *Diatoma tenue*, *Tabellaria flocculosa*, *T. fenestrata*, *Synedra Ulna*, *Fragilaria virescens*, *F. capucina*, *F. capucina lanceolata*.

250 metres, 3 gatherings: *Tabellaria flocculosa*, *Diatoma hiemale*, *Achnanthes minutissima cryptocephala*, *Fragilaria intermedia*, *F. mutabilis elliptica*.

300 metres, 4 gatherings: *Synedra Ulna*, *Tabellaria flocculosa*, *Cymbella parva*, *Achnanthes lanceolata*, *Fragilaria capucina*, *Meridion circulare*, *Frustulia vulgaris*, *F. saxonica*, *Eunotia impressa*, *Diatoma hiemale*.

375 metres, 1 gathering: *Melosira crenulata*.

450 metres, 1 gathering: *Diatoma Balfouriana*, *Tabellaria flocculosa*, *Achnanthes minutissima*, *Navicula perpusilla*, *Eunotia incisa*, *Navicula trin. biceps*, *Caloneis lepidula*.

550 metres, 1 gathering: *Navicula Rotæana*, *Eunotia Diodon minor*.

The only one of these gatherings which appears to me to have a more decidedly polar or alpine character is the gathering from 450 m. from Højelkjæld on Bordö, it is especially characterized by the frequent occurrence of *Diatoma Balfouriana*; of other polar or alpine species it contains: *Navicula trinod. biceps*, *Navicula lepidula*, *Anomooneis zellensis* and *Fragilaria levissima* var. *undulata*. *Fragilaria levissima* is a new species first found by P. T. Cleve in a gathering from Cape Flora and described and figured by him in his »Diatoms from Franz-Josef Land« 1898.

As mentioned above the species and varieties from salt and brackish water included in this paper have been met with in a few gatherings only, but such forms also occur dispersed in gatherings which are evidently collected from pure freshwater. Such a form is particularly *Surirella Moelleriana*. A. Schmidt mentions this species as occurring in three different places: Holstein; Pensacola and Lodgie Coldstone (Scotland). De Toni says (Syllog. p. 595) ad Holstein, in portu Pensacola and ad oras Scotiæ. Therefore it appears to be a saltwater form. I do not know if it occurs along the coasts of the Færøes, if it is found there we may presume that it has been carried thither by the Gulf Stream; but as is the case with other marine forms which are found dispersed in gatherings of freshwater forms it may also have been conveyed thither by the agency of the birds, perhaps in their dung. But it is possible that *Surirella Moelleriana* is a freshwater form and that it has been carried out into the sea along the coasts by the freshwater, the fact of its having been found in the three above-mentioned localities may therefore be thus explained. *Surirella Moelleriana* occurs in Van Heurck's Types No. 17 which consists of strictly freshwater forms from Caermarthen in England. In the list of names it is mentioned as *Surirella Mölleri*.

I have had four gatherings of Plankton for examination, viz. from Sörvaagsvatn near Bosdalafos; mouth of Sandsvatn; the lake in Vaags Ejde; and the lake in Kvalbö Ejde. *Asterionella formosa* is the only true form of freshwater-Plankton-Diatom. Here I may remark that species have been found in Plankton which do not occur in the rest of the material, but these occur only as single specimens, e. g. *Amphiptera pellucida*, *Cymatopleura Solea*, *Campylodiscus noricus*.

FUNGI

BY

E. ROSTRUP.

Abbreviations of the discoverers' names: C. O. = Ostenfeld and Hartz; E. R. = E. Rostrup; E. W. = E. Warming.

CHYTRIDIACEAE.

1. *Cladochytrium Menyanthis* de Bary.

Österö: Næs (C. O.).

PERONOSPORACEAE.

2. *Cystopus candidus* (P.) Léy.

On *Cakile maritima*. Sandö: the dunes at Sandsvaag (E. W.). — On *Capsella* b. p. Österö: Göte (E. W.). — On *Cardamine prat.* Strömö: Hvidenæs (E. R.). — On *Draba incana*. Nolsö; Syderö: Trangisvaag (E. W.). — On *Arabis petraea*. Viderö: Malinsfjæld (C. O.).

3. *Plasmopara nivea*. (Ung.) Schroet.

Found growing on *Angelica silvestris*. Österö: Göte; Syderö: Trangisvaag (E. W.).

4. *P. densa* (Rbh.) Schroet.

On *Alectorolophus minor*. Viderö: Viderejde; Strömö: Örcenge; Syderö: Frodebö, Trangisvaag (C. O.).

5. *Peronospora Alsinearum* Casp.

On *Cerastium viscosum*. Syderö: Frodebö. — On *Stellaria media*. Viderö; Strömö: Gjøv (C. O.).

6. *P. Viciae* (Berk.) de Bary.

Found on *Vicia Cracca*. Nolsö (C. O.).

7. *P. Ficariae* Tul.

On *Ranunculus repens*. Syderö: Porkere (C. O.). — On *Ranunculus Flammula*. Viderö: Viderejde; Syderö: Kvalbø, Trangisvaag (C. O.).

8. *P. Rumicis* Corda.

On *Rumex Acetosa*. Viderö: Viderejde (C. O.); Österö: Göte (E. W.).

PROTOMYCETACEAE.

9. *Protomyces macrosporus* Unger.

On *Angelica silvestris*. Kunö; Strömö: Vestmanhavn; Syderö: Vaag (C. O.).

USTILAGINACEAE.

10. *Sphacelotheca Hydropiperis* (Schum.) de Bary.

Found on *Polygonum viviparum*. Fuglō (C. O.).

11. *Doassansia Martinoffiana* (Thüm.) Schroet.

On stems of *Potamogeton natans*. Sandö (E. W.).

12. *Entyloma Ranunculi* (Bon.) Schroet.

On *Ranunculus acer*. Österö: Svinaa (C. O.). — On *Ranunculus repens*. Österö: Göte (E. W.); Syderö: Trangisvaag (C. O.).

13. *E. caricinum* Rostr.

Found on *Carex flava*. Sandö (C. Jensen).

14. *Ustilago filiformis* (Schränk) Rostr.

On *Glyceria fluitans*. Syderö: Famien (C. O.).

15. *U. Hordei* (P.) Bref.

Not rare on *Hordeum vulgare*. — On *Hord. distichum*. Syderö: Kvalbø, Tværaa (E. R.).

16. *U. Avenae* (P.) Rostr.

Found on *Avena sativa*. Strömö: Thorshavn (E. R.).

17. *U. Caricis* (P.) Fuckel.

On *Carex echinata*. Svinö (C. O.); Österö: Svinaa, Selletræ (C. O.). — On *Carex panicea*. Kunö (E. W.); Sandö: Skopen; Österö: Svinaa (C. O.). — On *Carex rigida*. Bordö: Skopen (C. O.).

18. *U. violacea* (P.) Fuckel.

On *Melandrium diurnum*. Common (E. R.). — On *Lychnis fl. cuc.* Kunö (E. W.); Viderö: Viderejde (C. O.). Syderö: Skarvetange, Trangisvaag (E. W.). — On *Silene acaulis*. Syderö: Ördevig, Trangisvaag (C. O.).

19. *U. Pinguiculæ* Rostr.

On *Pinguicula vulg.* Viderö: Malinsfjæld; Strömö: Lejnumvatn; Syderö: Tværaa, Trangisvaag (C. O.).

20. *U. vinosa* (Berk.) Tul.

On *Oxyria digyna*. Fuglō; Viderö: Bergsmunna; Bordö: Holgafjæld (C. O.); Nolsö (E. W.).

21. *U. Warmingii* Rostr.

On *Rumex*. Kunö; Kalsö: Myggedal; Bordö: Klaksvig (E. W.). — On *Rumex obtusifolius*. Österö: Selletræ, Næs; Strömö: Kirkebø. — On *Rumex Acetosa*. Österö: Næs (C. O.).

22. *Tilletia decipiens* (P.) Kke.

On *Agrostis vulgaris*. Common (E. R.). — On *Agrostis canina*. Thors-havn and several other places (E. R.).

23. *Urocystis sorosporioides* Kke.

On *Thalictrum alp.* Fuglō (C. O.).

24. *Sorosporium Montiae* Rostr.

On *Montia rivularis*. Hestō (F. Børgesen). Österō: Svinaa (C. O.).

25. *Entorrhiza Cypericola* (Magn.) de Toni.

Upon roots of *Scirpus pauciflorus*. Syderō: Trangisvaag (C. O.).

26. *E. Casparyana* (Magn.) de Toni.

Upon roots of *Juncus lampocarpus*. Sandō: Sandsvatn (C. O.).

UREDINACEAE.

27. *Uromyces Polygoni* (P.) Fuckel.

Found on *Polygonum aviculare*. Syderō: Kvalbō (E. R.).

28. *Puccinia Calthae* Link.

Common on *Caltha palustris* (E. R. and C. O.).

29. *P. Violae* (Schum.) D. C.

Common on *Viola silvatica* (E. R. and C. O.).

30. *P. variabilis* (Grev.) Plowr.

On *Taraxacum*. Österō: Svinaa; Syderō: Tværaa, Vaag (C. O.); Sandō (E. W.). — The æcidia and the teleutospores are developed at the same places on the stalks, which thereby attain a monstrous size.

31. *P. Rubigo* D. C.

On *Holcus lanatus*. Österō; Svinō (C. O.).

32. *P. Poarum* Nielsen.

Only the æcidia (*Aecidium Tussilaginis*) are found at Kvalbō on Syderō (E. R.).

33. *P. obscura* Schroet.

On *Luzula multiflora*. Viderō: Viderejde; Syderō: Tværaa, Trangisvaag (C. O.). — Æcidia on *Bellis perennis* (*Aecidium Bellidis* Thüm.) at Thorshavn (Arthur Feddersen); Syderō: Kvanhauge (C. O.).

34. *P. borealis* Juel.

On *Agrostis* sp. Strömō: Öreenge (C. O.). — The æcidio-form (*Aecidium Thalictri* Grev.) on *Thalictrum alpinum* at Viderejde (Viderō), Lej-num (Strömō) and Kvanhauge (Syderō) (C. O.).

35. **P. septentrionalis** Juel.

On *Polygonum viviparum*. Syderö: Prästefjæld (E. R.). — The æcidiospores (*Aecidium Sommerfeltii* Joh.) on *Thalictrum alpinum* on Viderö: Malinsfjæld, Mornefjæld; Syderö: Örnefjæld (C. O.); Nolsö (F. Börgesen).

36. **P. Hieracii** Mart.

On *Hieracium*. Strömö: Aalekær (E. R.), Højvig (E. W.); Syderö: Trangisvaag, Vaag (C. O.).

37. **P. Taraxaci** Plowr.

Found on *Taraxacum*. Österö: Svinaa (C. O.).

38. **P. Acetosae** (Schum.) Kke.

On *Rumex Acetosa*. Österö: Lervig; Strömö: Vestmanhavn (E. W.); Sandö (E. R.).

39. **P. Epilobii** D. C.

On *Epilobium palustre*. Strömö: Aalekær (E. R.); Syderö: Tværaa (C. O.). — On *Epilob. alsinifolium*. Syderö: Trangisvaag, Vatnsdal (C. O., E. W.).

40. **P. Saxifraga** Schlect.

On *Saxifraga stellaris*. Viderö: Mornefjæld; Österö: Svinaa (C. O.).

41. **P. Oxyriae** Fuckel.

Found growing on *Oxyria digyna*. Nolsö (C. O.).

42. **P. Schneideri** Schroet.

On *Thymus Serpyllum*. Viderö: Bergsmunna; Österö: Næs; Vaagö: Midvaag (C. O.).

43. **P. Fergussonii** Berk.

On *Viola palustris*. Thorshavn (E. R.).

44. **Trachyspora Alchimillae** (P.) Schroet.

On *Alchimilla vulgaris*. Strömö: Skjællingfjæld (E. R.), Vestmanhavn (E. W.); Syderö: Kvalbö (E. R.), Tværaa (C. O.).

45. **Melampsorella Cerastii** (P.) Schroet.

Common on *Cerastium vulgatum* (E. R. and C. O.).

46. **Melampsora Lini** (P.) Tul.

Common on *Linum catharticum* (E. R. and C. O.).

47. **M. arctica** Rostr.

Common on *Salix herbacea* (E. R.).

48. **M. pustulata** (P.) Schroet.

On *Epilobium palustre*. Bordö: Klaksvig (A. Feddersen); Strömö: Sandegaerde (E. R.); Syderö: Trangisvaag (C. O.). — On *Epilob. alsefolium*. Österö: Næs; Syderö: Trangisvaag (C. O.). — On *Epilob. montan.* Österö: Næs (C. O.).

49. **M. Vacciniorum** (Lk.) Schroet.

Found in several localities on Vacc. Myrtillus (E. R.).

50. **Uredo Pyrolae** Mart.

On Pyrola minor. Bordö: Holgafjæld, Klaksvig (C. O.).

51. **U. Saxifragae** Strauss.

On Saxifraga caespitosa. Österö: Slattaratinde (C. Jensen).

52. **U. Polypodii** Pers.

On Cystopteris fragilis. Viderö: Mornefjæld (C. O.); Österö: Næs (E. R.), Svinaa (C. O.); Syderö: Skaalefjæld (C. Jensen).

DACRYOMYCETES.

53. **Dacryomyces stillatus** Nees.

On a boathouse. Strömö: Sandegærde (E. R.).

HYMENOMYCETES.

54. **Clavaria Ligula** Schaeff.

In a few localities amongst moss (E. R.).

55. **C. fusiformis** Sow.

In dense tufts amongst moss (E. R.).

56. **Cantharellus muscigenus** (Bull.) Fr.

Strömö: Gliversnæs (E. R.).

57. **Coprinus fimetarius** (L.) Fr.

Recorded by Svabo and Landt as growing on dunghills.

58. **Hygrophorus miniatus** Fr.

Common amongst moss and grass in damp localities (E. R.).

59. **H. conicus** (Scop.) Fr.

Rather common (E. R.).

60. **Russula fragilis** (P.) Fr.

Habitat not given (E. R.).

61. **Marasmius androsaceus** (L.) Fr.

Found on the branches of the heather at Toftevatn on Österö (E. R.).

62. **Panaeolus oampanulatus** (L.) Fr.

Syderö: Trangisvaag (C. O.).

63. **Anellaria separata** (L.) Karst.

Common on dung (E. R.).

64. **A. semiglobata** (Batsch) Schroet.

Syderö: Trangisvaag (C. O.).

65. **Psalliota campestris** (L.) Fr.

Trödum on Sandö and several other places (E. R.); Syderö: Kvalbö (C. O.); Österö: Ejde, Skaalefjordsbotn (C. O.).

66. **Galera hypnorum** (Schränk) Karst.

Syderö: Trangisvaag (C. O.).

67. **Omphalia umbellifera** (L.) Fr.

Common on Sphagnum (E. R.).

68. **Collybia murina** (Batsch) Fr.

Syderö: Trangisvaag (C. O.).

69. **Tricholoma sulfureum** (Bull.) Fr.

Syderö: Trangisvaag (C. O.).

70. **Lepiota granulosa** (Batsch) Fr.

Syderö: Trangisvaag (C. O.).

71. **Amanita muscaria** (L.) Pers.

Mentioned by Landt.

GASTEROMYCETES.

72. **Lycoperdon Bovista** (L.) Fr.

Bordö: Skaaletofte (Svabo).

TAPHRINACEAE.

73. **Magnusiella Potentillae** (Farl.) Sadebeck.

On *Potentilla erecta*. Syderö: Trangisvaag (C. O.).

ERYSIPHEACEAE.

74. **Sphærotheca Castagnei** Lévy.

On *Alchimilla vulgaris*. Sandö (C. O.).

75. **Erysiphe graminis** D. C.

On *Hordeum vulgare*. Nolsö (C. O.).

76. **E. Ulmariae** Pers.

On *Spiraea Ulmaria*. Thorshavn (E. W.).

PERISPORIACEAE.

77. **Asterina Veronicae** (Lib.) Cooke.

On *Veronica offic.* Österö: Svinaa; Syderö: Famen (C. O.).

SPHAERIACEAE.

78. **Physalospora Empetri** n. sp.

Perithecia epiphylla, sparsa; asci cylindracci; sporæ octonae, monostichae, ellipsoideae, simplices, hyalinae, longit. 18—20 μ , crassit. 10—12 μ .

In foliis Empetri nigri. Syderö: Frodebö (E. R.).

79. **Laestadia rhytismoides** (Berk.) Sacc.

On Dryas octopetala. Viderö: Malinsfjæld (H. G. Müller); Österö: Kodlen at Ejde (C. Feilberg).

80. **L. perpusilla** (Desm.) Sacc.

On Agrostis. Strömö: Öreenge (C. O.).

81. **Coleroa Achimillae** (Grev.) Wint.

On Alchimilla sp. Strömö: Skjællingfjæld (E. R.). — On Alchimilla Wichuræ Buser. Österö: Fuglefjordsfjæld; Fuglö (C. O.).

82. **Venturia islandica** Joh.

On Dryas octopetala. Fuglö (C. O.).

83. **Didymella glacialis** Rehm.

On Poa alpina. Nolsö (E. W.).

84. **Sphaerella Dryadicola** n. sp.

Perithecia epiphylla, subgregaria, atra. Asci ovoideo-oblongi, longit. 30—40 μ , crassit. 7—9 μ . Sporae cylindricae, longit. 10—14 μ , crassit. 3—4 μ , hyalinae, initio guttulae, dein 1-septatae.

In foliis Dryadis octopetalae. Fuglö (C. O.).

85. **S. minor** Karst.

On stems of Saxifraga nivalis. Syderö: Trangisvaag (C. O.).

86. **S. Stellarianearum** (Rbh.) Karst.

On Cerastium Edmondstonii and C. trigynum. Viderö: Villingedalsfjæld (C. Feilberg).

87. **S. Rumicis** (Desm.) Cooke.

On leaves of Rumex. Syderö: Kvalbö (E. W.).

88. **S. Iridis** Awd.

On Iris Pseudacorus. Garden at Sand on Sandö (E. W.).

89. **S. Tassiana** de Not.

On Festuca rubra. Syderö: Trangisvaag (C. O.).

90. **S. Wichuriana** Schroet.

On Carex Goodenoughii. Strömö: Arge (E. R.).

91. **Stigmatea confertissima** Fuckel.

On Geranium silvaticum. Garden in Thorshavn (E. W.).

92. **Massaria Pupula** (Fr.) Tul.

On the branch of a tree in a garden in Thorshavn (A. Feddersen).

93. **Leptosphaeria Doliolum** (P.) de Nol.

On dry stems of Archangelica and Angelica. Viderö: Viderejde (E.W.); Nolsö; Syderö: Kvanhauge (C. O.), Trangisvaag (E.W.), Vaag (E. R.).

94. **L. littoralis** Sacc.

On Agropyrum junceum. Sandö: dunes at Sand (E. R.).

95. **Pleospora herbarum** (P.) Rbh.

On Plantago maritima. Bordö (C. O.). — On Draba incana. Syderö: Vaag (C. O.). — On Draba hirta. Strömö: Lejnum (C. O.). — On Poa glauca. Svinö: Österhödda (C. O.).

96. **P. pentamera** Karst.

On Poa nemoralis. Österö: Svinäa (C. O.).

97. **P. polytricha** Tul.

On Agropyrum junceum. Syderö: Kvalbö (E. R.).

98. **Melanamma Pulvis pyrius** (P.) Fuckel.

On Salix glauca. Viderö: Malinsfjæld (C. O.).

HYPOCREACEAE.

99. **Claviceps microcephala** (Wallr.) Tul.

Common on Anthoxanthum odoratum (E. R.). — On Alopecurus pratensis. Thorshavn. — On Nardus stricta. Sandö: Sandsvatn (C. O.).

100. **Epichloë typhina** (P.) Tul.

On Agrostis stolonifera. Strömö: Gliversfjæld (E. R.).

101. **Nectria cinnabarina** (Tode) Fr.

On the branches of Sorbus and Alnus. Thorshavn (E. W.). — On Acer campestre. Thorshavn (E. R.).

102. **N. Ribis** (Tode) Rbh.

On Ribes rubrum. Strömö: Kirkebö Ruin (C. O.).

DOTHIDEACEAE.

103. **Phyllachora Junci** (Fr.) Fckl.

On Juncus effusus. Syderö: Trangisvaag (C. O.).

104. **Euryachora stellaris** (P.) Fckl.

On Campanula rotundifolia. Österö: Svinäa (C. O.).

105. **Dothidella thoracella** (Rutstr.) Sacc.

On Rhodiola. Strömö: Vestmanhavn (E. W.).

106. **D. Laminariæ** Rostr.

Common on *Laminaria*, e. g. Kunö (H. Jónsson), Sundelaget (F. Börgesen) on *L. færoënsis*.

107. **Plowrightia Ribesia** (P.) Sacc.

On *Ribes rubrum*. Strömö: Kirkebø Ruin (C. O.).

HYSTERIACEAE.

108. **Hypoderma commune** (Fr.) Duby.

On *Rhodiola*. Strömö: Gliversnæs (E. R.).

109. **Lophodermium juniperinum** (Fr.) de Not.

On *Juniperus*. Strömö: Glivernæs (E. R.); Österö (C. O.).

110. **L. caricinum** (Desm.) Duby.

On *Carex binervis*. Österö: Selletræ (C. O.). — On *Carex rigida*. Bordö: Klaksvig; Syderö (C. O.).

111. **L. arundinaceum** (Schrud.) Chev.

On *Festuca rubra*. In several localities (E. R.). — On *Psamma aren.* Sandö: Sand (C. O.). — On *Poa alpina*. Nolsö (E. W.).

PHACIDIACEAE.

112. **Rhytisma salicinum** (P.) Fr.

Common on *Salix herbacea* (E. R.). — On *Salix glauca*. Viderö: Malinsfjæld; Kunö (C. O.).

113. **R. Empetri** White.

On the stem of *Empetrum*. Found in many localities (C. O.).

114. **Trochila fuscella** Karst.

On *Carex atrata*. Viderö: Malinsfjæld (C. O.).

115. **T. diminuens** Karst.

On *Carex rigida*. Bordö (C. O.).

116. **P. Juncicola** Rostr.

On *Luzula arcuata*. Bordö (C. O.).

117. **Celidium Peltigeræ** (Nyl.) Karst.

On *Peltigera canina*. Thorshavn (E. R.).

DERMATEACEAE.

118. **Ephelina Rhinanthi** (Phill.) Sacc.

Common on the basal parts of the stems of *Alectorolophus* and *Euphrasia* (E. R. and C. O.). (Cfr. E. Rostrup's »Færøernes Flora« p. 48, Note).

PATELLARIACEAE.

119. *Heterosphaeria Patella* (Tode) Grev.

Common on the stems of Angelica (E. R. and C. O.). — On Spiraea Ulmaria. Syderö: Vaag (E. R.). (In E. Rostrup's »Færøernes Flora« it is wrongly named »Peziza Nidulus«).

PEZIZACEAE.

120. *Pyronema omphalodes* (Bull.) Fekl.

Syderö: Kvalbö (C. O.).

121. *Lachnea brunnea* (A. et S.).

Habitat not given (E. R.).

122. *Phialea cyathoidea* (Bull.) Gill.

On Archangelica. Viderö: Viderejde (E. W.).

123. *P. Juncicola* Rostr.

On Juncus triglumis. Strömö: Vardebakke (E. R.).

124. *Cyathicola coronata* (Bull.) de Not.

On Archangelica. Syderö: Vaag (C. O.).

125. *Mollisia cinerea* (Batsch) Karst.

On the branches of the heather at Toflevatn on Österö (E. R.).

HELVELLACEAE.

126. *Geoglossum ophioglossoides* (L.) Sacc.

Viderö (C. O.).

SPHÆROPSIDEAE.

127. *Phoma Saginae* n. sp.

Perithecia hypophylla, subgregaria, minuta, atra; sporae cylindraceae, longit. 14—16 μ , crassit. 3—4 μ .

In foliis Saginae subulatae. Strömö: Gliversnæs (E. R.).

128. *P. muralis* Sacc.

On Rhodiola. Strömö: Kirkebö (E. R.).

129. *P. subordinaria* Desm.

Found on Plantago lanceolata. Syderö: Trangisvaag (E. W.).

130. *P. Caricis* (Fr.) Sacc.

On Carex salina. Syderö: Skarvetange (C. O.).

131. *P. fusispora* n. sp.

Perithecia gregaria, subcutanea, depressa, epiphylla; sporae distincte fusoidae, 1-guttulatae, longit. 12—16 μ , crassit. 3—4 μ .

In foliis Psammae arenariae. Sandö (E. R.).

132. *P. graminella* Sacc.

On *Festuca rubra*. Viderö (E.W.). — On *Agropyrum junceum*. Syderö: Kvalbö (E.R.). — On *Hordeum*. Sandö: Skopen (C.O.).

133. *P. complanata* (Tode) Desm.

On dried stems of *Angelica* and *Alectorolophus* in several localities (E.R.).

134. *Cytospora microspora* (Corda) Rbh.

On the branches of *Crataegus*. Kirkebö Ruin (C.O.).

135. *C. macrobasis* Sacc.

On the branches of *Salix phylicifolia*. Syderö: Trangisvaag (C.O.).

136. *C. salicella* Sacc.

Found on branches of willow in a garden in Thorshavn (E.W.).

137. *Coniothyrium scapisedum* Sacc.

On *Plantago maritima*. Syderö: Vaag (C.O.).

138. *Ascochyta* Lini n. sp.

Perithecia sparsa, exigua, atra; sporae oblongae, utrinque obtusae, constricto—1-septatae, longit. $10\ \mu$, crassit. $5\ \mu$.

In caulibus Lini cathartici. Syderö: Trangisvaag (Helgi Jónsson).

139. *Darluca filum* (Biv.) Cast.

Found parasitic on *Puccinia Epilobii*. Syderö: Trangisvaag (C.O.).

140. *Diplodina graminea* Sacc.

Found on *Hordeum*. Viderö (C.O.).

141. *Dilophospora graminis* Desm.

On *Poa pratensis*. Österö: Næs (C.O.).

142. *Septoria Melandrii* Pass.

On *Melandr. diurn.* Strömö: Thorshavn (E.W.).

143. *S. Stellariae* Rob.

On *Stellaria media*. Viderö: Villingedal (E.W.).

144. *S. cercosperma* Rostr.

On *Papaver radicatum*. Fuglö (C.O.).

145. *S. semilunaris* Joh.

On *Molinia coerulea*. Bordö: Klaksvig (C.O.).

146. *S. Tritici* Desm.

On *Hordeum*. Sandö: Skopen (C.O.).

147. *S. arundinacea* Sacc.

On *Elymus*. Sandö (C.O.).

148. **Camarosporium salicinum** Sacc.

Found on branches of willow in a garden at Thorshavn (E. R.).

149. **Melasmia Dryadis** Rostr.

On *Dryas octopetala*. Viderö: Malinsfjæld (C. O.).

EXCIPULACEAE.

150. **Excipula Empetri** Fr.

On *Empetrum*. Österö: Næs (E. W.); Strömö: Thorshavn (C. O.).

151. **Discella carbonacea** (Fr.) Berk.

On branches of willow at Kirkebø Ruin (Strömö) (C. O.).

152. **Discula microsperma** (Berk.) Sacc.

On branches of willow in a garden at Thorshavn (Strömö) (E. W.).

HYPHOMYCETES.

153. **Ovularia obliqua** (Cooke) Oud.

On *Rumex obtusifolius*. Viderö: Viderejde; Bordö: Klaksvig; Syderö: Trangisvaag, Frodebø (C. O.).

154. **O. Saxifragae** Rostr.

On *Saxifraga caespitosa*. Syderö: Trangisvaag (C. O.).

155. **Ramularia Taraxaci** Karst.

On *Taraxacum*. Österö: Göte (E. W.).

156. **Bostrichonema alpestris** Ces.

On *Polygonum viviparum*. Syderö: Trangisvaag, Örneffjæld (C. O.).

157. **Botrytis vulgaris** Fr.

Found on potato-leaves. Strömö: Thorshavn (E. W.).

158. **Cercospora Montiae** n. sp.

Amphigena, folia nigrefacta totum occupans; hyphae repentes, pauci-septatae, tortuosae, brunneae; conidia sursum attenuata, long. 60—100 μ , crassit. deorsum 10—12 μ , sursum 3—4 μ , fusca, apice hyalina.

In foliis *Montiae minoris*. Syderö: Trangisvaag; Viderö: Viderejde (C. O.).

159. **Cladosporium herbarum** (P.) Lk.

Common on different decaying portions of plants (E. R.).

160. **C. graminum** Lk.

On *Molinia coerulea*. Bordö: Klaksvig (C. O.). — On *Elymus*. Sandö: the dunes at Sand (C. O.). — On *Festuca rubra*. Viderö (E. W.).

161. *Scolecotrichum graminis* Fuckel.

On *Glyceria distans*. Strömö: Thorshavn (C. O.).

162. *Napicladium Ossifragi* n. sp.

Cæspituli dense aggregati, fusci; conidia oblonga vel clavata, dilute lutea, 1—3-septata, longit. 20—28 μ , crassit. 7—8 μ .

In foliis *Narthecei ossifragi*. Viderö: Viderejde; Österö: Svinaa (C. O.).

163. *Helminthosporium gramineum* Rbh.

On *Hordeum*. Svinö (Effersö); Vaagö: Midvaag (C. O.).

164. *Sporidesmium myrianum* Desm.

On *Elymus*. Sandö: the dunes at Sand (C. O.).

165. *Macrosporium heterosporum* Desm.

On *Elymus*. Sandö: the dunes at Sand (E. W.).

166. *Goniosporium puccinioides* (K. et S.) Lk.

Found growing on *Carex flacca*. Vaagö: Bosdalafofs; Syderö: Vaag (C. O.).

167. *Isariopsis alborosella* (Desm.) Sacc.

On *Cerastium vulg.* Syderö: Kvanhauge (E. W.).

168. *Illosporium muscorum* Rostr.

On *Sphagnum* and *Hypnum*. Nolsö (F. Börgesen).

LICHENES

BY

J. S. DEICHMANN BRANTH.

THE order and nomenclature of the following list is much the same as in Rostrup's »Færøernes Flora« 1870¹. In the numerous cases where I can neither accept the conventional nor the new species as true species — i. e. as distinct and not transitional — but must regard them as confluent, they are marked with either of the letters (a, b, c, d, etc.) in parentheses and placed after the number, much in the same way as in Tuckerman's »Synopsis of the North American Lichens, 1882«, so that the letter (a) placed in front of a species generally indicates that the species is considered as the principal or normal one. Many of the original specimens of the lichens collected and enumerated by Dr. Rostrup were not to be had for examination and some were but in an indeterminable state. This evident drawback has however been diminished by the fact of the Dr.'s Nylander and Th. Fries having revised the determinations of many of the critical forms before the publication of Dr. Rostrup's list. An *R.* within parentheses placed after the name of a locality signifies that it is taken from the above-mentioned list by Dr. Rostrup; ! within parentheses indicates that the localities are those mentioned in the collections of Mr. J. Hartz and Mr. C. H. Ostenfeld; some material — marine species — has been collected by Mr. Børgesen and one species (marked C. J.) was found by Mr. C. Jensen. In »Botaniska Notiser«, 1896 p. 74 Simmons has recorded a few lichens from the Færöes.

¹ Botanisk Tidsskrift, Bd. 4, Kjobenhavn 1870.

I. Collemaceae.

1. **Ephebe pubescens** (L.). *Bangia atrovirens* Lyngbye, Hydrophyt. p. 85.

Here and there, and sometimes abundant on damp or shady rocks and boulders (Lyngbye, R., †).

2. **Lichina confinis** Ag. *Gelidium pygmaeum* Lyngbye, Hydrophyt. p. 41.

Here and there on rocks at the sea near the water (Lyngbye, R., †).

3. **Pyrenopsis granatina** (Sommerf.).

On rocks. Österö: Slättarefinde (R.).

4 (a). **Collema pulposum** (Bernh.).

On the ground. Syderö: Famievatn (†); Strömö: Kirkebö (R.).

5 (b). **C. crispum** (L.).

On rocks and old walls among mosses. Nolsö: near the church (R.); Strömö: the redoubt of Thorshavn (R.).

6. **C. flaccidum** Ach.

Common in damp localities in ravines (R., †).

7. **Leptogium saturninum** (Dicks.).

Among mosses. Vaagö: Rensatinder (R.).

8 (a). **L. lacerum** (Sw.).

Rather common in shady localities among mosses (R., †).

9 (b). **L. scotinum** (Ach.).

The same localities and distribution as above (R., †).

10. **L. subtile** (Schröd.).

Rather frequent according to R.

11. **Polychidium muscicola** (Sw.). *Leptogium muscicola* Fr., Rostr. p. 93.

On rocks among mosses. Svinö (†); Syderö: Famien (R.); Vaagö: Rensatinder (R.).

Nos 3, 7, 9 11 only are found with apothecia.

II. Lichenaceae.

1. FRUTICULOSAE.

Usnea hirta (L.).

Recorded in Trevelyan's list, but not found again.

12 (a). **Alectoria jubata** (L.).

On boulders and pebbles among mosses. Rather frequent in various forms (R., !).

The paler thallus (*implexa* Hoffm.) changes into yellow when treated with hydrate of potash, but the darker one (*chalybeiformis* Ach.) does not change. If these colours have specific value, it shall be quite unnecessary to await the chemical reaction, because the natural colours show similar differences.

13 (b). **A. bicolor** (Ehrh.).

Strömö: Kirkebøfjæld (R.).

14. **A. nigricans** (Ach.).

On rocks and ground. Strömö: Gliversrejn (R.); Viderö (!); Österö: Næs (R.).

A. ochroleuca has not been found in the Færöes, and in Scotland it has been met with in one locality only, while *A. nigricans* often occurs there on the mountains, and usually abundantly. Perhaps the latter species can better endure strong cold as well as damp air, since it is also rather common in Spitzbergen and East Greenland, while *ochroleuca* is very rare.

15. **Cornicularia aculeata** (Ehrh.).

On dry gravelly ground, common (R., !).

16. **C. tristis** (Web.).

S. E. side of Kunö (!).

Cystocoleus rupestris (Pers.). *C. ebeneus* Thw., *Racodium* Pers.

Strömö: Kirkebøfjæld (!).

17 (a). **Ramalina scopulorum** (Retz.).

On rocks by the sea, common and abundant (R., !).

Has sometimes a vigorous growth, but more often the thallus is weakly developed, almost round. Neither the cortex nor medulla gives any distinct reaction when treated with hydrate of potash, and consequently the specimens as not being colorated ought to be referred to *R. cuspidata* Nyl. They have often soredia as the following species.

18 (b). **R. farinacea** (L.).

On the mountains, and in the interior of the islands, common (R., !).

In the Herb. Horti Hafn. there is a specimen from the Færöes, named var. *canaliculata* (Fl. dan. 2636, 2), and certainly approaching this variety. Other specimens collected by Simmons and named *R. subfarinacea* Nyl., which when treated with hydrate of potash

ought to give a yellowish and then rusty-red reaction of medulla and soredia, do not do so at all and must consequently be referred to *R. farinacea*, also by those who give importance to chemical reactions as specific characters.

19 (a). ***Stereocaulon coralloides*** Fr.

Here and there, in crevices, on rocks and pebbles, but weakly developed (R., !).

20 (b). ***S. denudatum*** Flk. and var. ***pulvinatum*** Schaer.

On pebbles and gravelly ground, very common; the specimens often very low, 1–2 mm. only (R., !).

21 (c). ***S. tomentosum*** Fr.

On gravelly ground, here and there (R., !).

Var. ***alpinum*** (Laur.).

As above. Syderö: Prästefjæld (R.).

22 (d). ***S. paschale*** (L.).

As above. Bordö: Helgefjæld; Strömö: Navnefjæld (!).

23. ***S. cereolinum*** Ach.

On boulders. Nolsö (R.); Strömö: Sandegærde (R.).

24 (a). ***Cladonia gracilis*** (L.).

On gravelly and peaty ground. Here and there (R., !).

25 (b). ***C. alcicornis*** (Lightf.).

On heath. Bordö: Gerdumrejn (!); Strömö: Højvig (!); Syderö: Kvalvig (!).

The laciniae attain a centim. in length, and occur more frequently with apothecia than the other phaeocarpous *Cladoniae* of the Færöes.

26 (c). ***C. cervicornis*** Ach.

Perhaps the most common (R., !).

In the specimens from Trangisvaag (!) the leaves are turgid, almost bladdery, probably a monstrosity. The Færöese specimens give no yellow reaction on application of hydrate of potash and in Nylander's nomenclature they are to be called *C. sobolifera* Del.

27 (d). ***C. decorticata*** (Flk.).

Here and there (R., !).

C. degenerans and its var. ***lepidota*** (Færöernes Flora p. 94) I refer to this type.

28 (e). ***C. pyxidata*** (L.).

Very common on rocks among mosses and on the ground (R., !).

29 (f). *C. fimbriata* (L.).

On rotten mosses and twigs. Strömö: Thorshavn (R.), Højvig (!); Syderö: Kvalbö (R.).

30. *C. turgida* (Ehrh.).

Together with *C. gracilis*. Strömö: Between Thorshavn and Velbestad (Simmons). I have not seen the specimens.

31 (a). *C. furcata* (Schreb.).

Here and there (R., !).

Var. *subulata* (L.).

Common (R., !).

Var. *pungens* (Ach.).

Here and there (R., !).

Var. *muricata* Del.

Syderö: at Kvalbö (R.); determined by Nyl.

32 (b). *C. squamosa* (Hoffm.).

Strömö: Velbestad (R.).

33 (a). *C. cornucopioides* (L.).

On heath and boulders, common (R., !).

34 (b). *C. Floerkeana* Fr.

The same habitat as above, but not common. Strömö: Öreunge (!); Svinö (!); Österö: Toftevatn.

Sometimes a form occurs, rather like *C. digitata* f. *brachytes* Ach.; intermediate.

Sandö: Skopen (!); Svinö (!).

35 (c). *C. bellidiflora* (Ach.).

The same habitat as above, here and there, but not vigorous (R., !).

36. *C. rangiferina* (L.) et var. *silvatica* (Hoffm.).

On moorland and mountains, frequent (R., !).

37. *C. uncialis* (L.).

The same habitat as above, frequent (R., !).

38. *Thamnolia vermicularis* (L.).

On the higher mountains, rather frequent, but occurs very sparsely and singly (R., ?).

2. FOLIOLOSAE

(excl. *Xanthoria parietina* et *elegante*).

39 (a). *Peltigera canina* (L.) et var. *rufescens* (Weis.).

Among mosses, common (R., !).

40 (b). **P. polydactyla** Hoffm.

Among mosses, common (R., ♀).

41 (c). **P. aphthosa** (L.).

Among mosses, here and there (R., ♀).

42. **P. venosa** (L.).

Kalsö: Blankeskaalefjæld (♀).

43. **Nephroma lusitanicum** (Schaer.).

* In ravines and on ledges, here and there (R., ♀).

All that I have seen from the Færöes under the name of *N. laevigatum*, belongs to this species (medulla yellow, purplish when treated with hydrate of potash). Its var. *Hibernicum* Nyl. has also been found (medulla white, purplish when treated with hydrate of potash), giving room to the question: which is to be considered most important, the natural colour or the artificial? The *lusitanicum* is more common on all the Atlantic shores than *laevigatum*, but perhaps it is not really a different species.

44. **N. tomentosum** (Hoffm.).

Among mosses. Vaagö: Rensatinder (C. J.).

45. **Solorina crocea** (L.).

On the ground in the mountains. Kalsö: Blankeskaalefjæld (♀); Strömö: between Kalbakfjord and Skjællingfjæld (R.); Syderö: Axlen (R.); Vaagö: Rensatinder (R.); Österö: Rejafjældstinde (♀), Slattaretinde (R.).

46. **S. saccata** (L.).

Sporae 4-nae, 40—50 μ .

On the ground. Syderö: Kvanhaugen (♀), Trangisvaag (♀).

47. **S. bispora** Nyl.

Sporae 2-nae, 70—80 μ .

Fuglö (♀); Kalsö: Blankeskaalefjæld (♀); Kunö (♀); Strömö: ravine at Gjanöre (♀); Viderö: Vedvig (♀).

Both *S. saccata* and *S. bispora* are found in Iceland. In Greenland *S. bispora* is the more frequent. At Scoresby Sound there occurs a var. *octospora*, otherwise quite similar to the others. *S. bispora* has not usually a larger thallus and more urceolate apothecia than *S. saccata*; the latter can vary from slightly impressed to deeply urceolate.

48. **Sticta amplissima** (Scop.).

On large boulders with *S. herbacea*. Svinö: near the village (♀); Österö: Toftevatn (♀).

The interior of the sinus between the lobuli usually forms the little circular aperture like that of a button-hole which is characteristic of this species.

49. **St. herbacea** (Huds.).

Syderö: Skarvetange (R.); Vaagö: Vaag Gjöy (!); Spec. fert. in Mus. Hafn. from 1817 (Lyngbye); Österö: Toftevatn (!).

50. **St. pulmonaria** (L.) (not *S. linita*).

Nolsö: a rocky ledge at about 250 m. (!).

51. **St. fuliginosa** Dicks.

On rocky ledges and in damp localities in ravines. Nolsö (!); Strömö: ravine near Vestmanhavn (R., !), Kirkebö (R.); Syderö: Frodebö and Ördevig (R.).

Var. **limbata** (Sm.).

Syderö: Hovedalen (!); Österö: Toftevatn (!).

52. **Cetraria islandica** (L.).

Amongst mosses; rather common, but not abundant.

Var. **crispa** Ach.

The most common (R., !).

52. **C. saepincola** var. **chlorophylla** (Humb.).

On large boulders. Sandö: Skopen (!); Österö: Toftevatn (!).

? **Evernia furfuracea** (L.).

Mentioned by Landt and Lyngbye, but not found later.

54. **Parmelia saxatilis** (L.).

On rocks, over mosses and twigs; very common (R., !).

Together with its varieties, especially **omphalodes** (L.), but also others, e. g. var. **laevis** Nyl., var. **panniformis** Ach., var. **furfuracea** Schaer., etc.

55. **P. olivacea** (L.).

On rocks and boulders, rare (R., !).

Var. **prolixa** Ach.

Sandö: Sand; Strömö: Sandegærde (R.), Skansetangen (!); Österö: Næs (!).

Var. **fuliginosa** (medulla, when treated with hypochlorite of lime, red).

Strömö: Kirkebö (!); Viderö: Vedvig (!).

56. **P. lanata** (L.).

On boulders. Here and there (R., !).

57. **P. alpicola** Th. Fr.

Fragments on rocks (!). It is likely, that both *P. physodes* and *P. encausta* of previous authors are this species or variety as one chooses to consider it.

58. *Physcia ciliaris* (L.) var. *saxicola* Nyl. *Anaptychia ciliaris* f. *melanosticta* Simmons p. 74.

Rocks on sea-shore, rare. Nolsö (Simmons); Sandö: Troidhoved (R.); Syderö: Kvalbö Ejde (!).

59. *Ph. aquila* (Ach.).

Rocks near the sea, rather common (R., !).

60. *Ph. pulverulenta* var. *muscigena* Ach.

On the ground over rotten twigs. Syderö: Vaags Ejde (!); rudimentary.

61. *Ph. stellaris* (L.).

On rocks, rare. Sandö: Sandsvatn (!); Syderö: Famievatn (!); Vaagö: Sörvaagsvatn (!). On Ribes; Strömö: Kirkebö (!, Thorshavn (R.).

Var. *aipolia* Ach.

Syderö: Vaags Ejde on drift-wood (!).

Var. *leptalea* Ach.

On rocks.

Var. *caesia* Hoffm.

Syderö: Frodebö (R.).

62. *Gyrophora hyperborea* (Hoffm.).

On rocks. Svinö (!).

Var. *arctica* Ach.

Mentioned from the Færöes in Fl. dan. t. 2450.

63. *G. proboscidea* (L.).

Fuglø (!); Kalsö: Blankeskaalefjæld (!); Strömö: Skjællingfjæld; Viderö: Villingedalsfjæld (!); Österö: Rejafjældslinde (!).

64. *G. cylindrica* (L.).

Especially on boulders; the most common of the genus (R., !).

? *G. hirsuta* Ach.

Mentioned by Lyngbye from the top of Skjællingfjæld. Perhaps *G. proboscidea*.

3. XANTHOCARPAE (sporis biloculatis).

65. *Xanthoria parietina* (L.).

On Ribes. Strömö: Thorshavn and Kirkebö (R., !). On wood. Syderö: Kvalbö, Vaag (!).

Var. *aureola* Ach.

On rocks by the shore, common (R., !).

Var. *lychnea* Ach.

Syderö: Famievatn (!).

? *X. elegans* (Link.).

There are no good specimens from the Faröes, and the imperfect ones may be *X. elegans*, but that, however, is doubtful.

66. *Placodium murorum* (Hoffm.).

Rocks on sea-shore. Sandö (!); Skuö (R.).

Var. *obliteratum* Pers.

Near the sea; Sandö: Grothusvatn (!), together with *Verrucaria maura*, *Lecanora helicopis* and *poliophaea*; Strömö: Kirkebö (!).

67. *P. vitellinum* (Ehrh.).

Rocks by the shore. Rather common (R., !).

Var. *octospora* Nyl.

Rare.

68 (a). *P. cerinum* (Ehrh.).

Österö: Selletræ, on rocks near the shore (!).

69 (b). *P. aurantiacum* (Lightf.).

Stem of *Salix herbacea*. Strömö: Højvig (R.).

70 (c). *P. jungermanniae* (Vahl).

On the ground. Syderö: Famien (R.).

71 (d). *P. pyraceum* (Ach.).

On rocks and stones. Sandö (!); Strömö: Kirkebö (!); Vaagö: Sörvaagsvatn (!).

Properly speaking Nos. 70 and 71 differ with regard to habitat only.

72 (e). *P. ferrugineum* (Huds.).

On rocks and stones, common, particularly on the sea-shore.

4. CRUSTULOSAE.

a. *Lecanoreae*.

73 (a). *Pannaria brunnea* (Sw.).

On the ground, common (R., !).

Var. *demissa* Th. Fr.

Sandö (R.).

74 (b). *P. nebulosa* (Hoffm.).

Strömö: Vestmanhavn, over *Scapania nemorosa* (R.).

75. *P. microphylla* (Sw.).

On rocks, rarely on the ground (R., !).

76. *P. Hookeri* (Sw.).

On rocks, here and there (R., !).

77. *P. elaeina* (Wahlenb.).

On rocks. Kunö: near the village (!); Syderö: Famievatn (!); Vaagö: Rensatinder (R.), Sandevaag (!).

78. *Squamaria gelida* (L.).

On rocks, especially on pebbles on the mountains, very common (R., !).

79. *S. straminea* (Wahlenb.).

On rocks. Syderö: Famievatn (!); Vaagö: Sörvaagsvatn (!).

80. *S. chrysoleuca* (Sw.).

On rocks. Syderö: Famievatn (!).

81. *S. cartilaginea* (Westr.).

On rocks, here and there (R., !).

82. *S. saxicola* (Poll.) et var. *diffRACTA* Ach. (an imperfect state).

On rocks. Sandö: Skopen (!), Grothusvatn (!); Strömö: Velbestad (!), Kirkebö (!); Syderö: Famievatn (!).

83. *Lecanora hypnorum* (Vahl) et varr.

Among mosses on the ground, here and there (R., !).

84. *L. atra* (Huds.).

Common on rocks. Apothecia attain 4 mm. in diam. (R., !).

85. *L. galactina* Ach. var. *deminuta* Stenh.

On rocks. Vaagö: Sörvaagsvatn (!).

86 (a). *L. subfusca* (L.).

On trees at Thorshavn (R.), on rocks, here and there (R., !).

Var. *atrynea* Ach.

Strömö: Gjanöre; Syderö.

87 (b). *L. sordida* f. *subcarnea* Ach.

On rocks. Nolsö (!); Strömö: ravine near Vestmanhavn (!).

88 (c). *L. Hageni* Ach.

On rocks. Strömö: Sandegærde and Kirkebö (R.).

To this species or variety belong some marine forms with variously incrassated thallus, which are also found in the Færöes, mostly at Thorshavn. *Lecanora helicopis* Wahlenb., *L. subfusca* var. *lainea* Fr. and *L. prosechoides* Nyl. are — no doubt rightly — regarded as synonyms by Nyl. himself in Crombie's »Lichens of Britain« p. 426 and the type must then retain its original name. It was found by Mr. Børgesen. *L. poliophaea* Wahlenb. is found on several of the islands (R., !) and is related to the three above by a series of intermediate forms.

89 (a). *L. polytropa* (Ehrh.).

On rocks, rather common (R., !). — In »Skandsetangen» at Thorshavn it occurs with large tuberculate apothecia (!), probably var. *conglobata* (Sommerf.). The form *intricata* (Schröd.) is found on several of the islands (!).

90 (b). *L. sulphurea* (Hoffm.).

On rocks. Nolsö (!); Sandö: Grothusvatn (!); Skuö (R.); Strömö: Kirkebö (R., !), Thorshavn (R.), Kirkeböfjæld (!); Viderö: Malinsfjæld (!); Österö: Næs (!).

The normal thallus sometimes appears dealbated and as if it were worn.

91. *L. frustulosa* (Dicks.).

On rocks. Sandö: Sandsvatn. — It does not differ from Arn. Exs. 1162.

92. *L. oculata* (Dicks.).

On rotten twigs on the ground, sterile. Sandö: Skopen (!); Svinö (!); Viderö: Malinsfjæld (!).

93. *L. badia* (Pers.).

On rocks. Bordö: Klakken (!); Strömö: Lejnumvatn (!); Viderö: Viderejde (!); Österö: Toftevatn (!); Vaagö: Sörvaagsvatn (!).

The facies is that of *L. atriseda*, but the spores those of *L. badia*.

94. *L. cyrtella* (Ach.), *L. erysibe* f. *albariella* Nyl., Rostr. »Færøernes Flora» = f. *saxicola cyrtellae*.

On rocks. Sandö: Grothusvatn (!); Strömö: Thorshavn (R.); on trees at Thorshavn (R.).

95. *L. aipospila* Wahlenb.

Sporae, 1-sept., 7—12 μ .

Sandö: Sandsvatn (!).

96 (a). *L. tartarea* (L.) et f. *grandinosa* Ach.

On rocks and sometimes over mosses; very common (R., !).

97 (b). *L. parella* (L.).

On rocks only (R., !). The most common of the two, provided the deciding character be absence of reaction in the margin on treatment with hypochlorite of lime, but if the deciding character be nudity of the disk in the apothecia, then *tartarea* is the more common.

98 (a). *L. cinerea* (L.).

On rocks. Strömö: Öreenge (!); Syderö: Famievatn (!). The specimen from Famievatn does not redden when treated with hydrate of potash except about the apothecia.

99 (b). **L. gibbosa** (Ach.).

On rocks and pebbles in the gravel. Very common and variable (R., !).

Var. **depressa** Nyl.

Strömö: Højvig (!).

f. **obscurata** Th. Fr.

Syderö: Famievatn (!).

100 (c). **L. pelobotrya** (Wahlenb.).

Together with the above-mentioned, rather common (R., !). Margin of the apothecia is sometimes livid, and the disk dark red.

101. **L. lacustris** (With.).

On rocks and stones in damp localities. Rather common (R., !).

102. **L. phaeops** (Nyl.).

Strömö: ravine at Vestmanhavn (!).

103. **Rinodina sophodes** var. **exigua** Ach.

Rocks and boulders. Rather common (R., !). Syderö: driftwood resembling mahogany; sometimes the exterior much resembles *Lecanora Hageni* (!).

104. **R. turfacea** (Wahlenb.).

Over mosses. Vaagö: Rensatinder (R.).

105. **Haematomma ventosum** (L.).

Österö: Östnæs (Næs-Reuk) (!).

106 (a). **Acarospora cervina** f. **smaragdula** (Wahlenb.).

On boulders and pebbles. Common, but rarely well-developed (R., !).

107 (b). **A. glaucocarpa** (Wahlenb.).

Syderö: Örnefjæld (!), Famién (!).

Intermediate between *A. cervina* and *eucarpa*. Apothecia naked (var. *rubricosa* Ach., Th. Fr. Scand. p. 213).

108. **Pertusaria xanthostoma** Sommerf.

On twigs upon the ground. Svinö (!); Viderö: Malinsfjæld (!); Vedvig (!).

b. *Lecideaceae*.109. **Sphyridium placophyllum** (Wahlenb.).

On the ground. Kalsö: Blankeskaalefjæld (!); Syderö: Örnefjæld at some 400 m. (!). The *Karschia (Buellia) scabrosa* (Ach.) grows on its thallus.

110. **S. byssoides** (L.).

On the ground here and there, rarely fertile (R., !).

111. **Biatora coarctata** Sm. and var. *elachista* (Ach.), *Lecidea coarctata* Nyl. Rostr. p. 99.

On rocks and pebbles, particularly in damp places. Rather common (R., !).

112. **B. vernalis** (L.), *Lecidea vernalis* Ach. Rostr. p. 99.

Hestö (R.).

113. **B. Berengeriana** (Mass.), *Lecidea miscella* Ach. Rostr. p. 100.

On the ground. Strömö: Thorshavn; Syderö: Frodebö (R.).

114. **B. sanguineo-atra** (Wulfen), *Lecidea sanguineo-atra* Ach. Rostr. p. 100.

On the ground. Strömö: Thorshavn; Syderö: Frodebö and Ördavig (R.).

115. **B. fuscorubens** Nyl.

On rocks. Strömö: Gjanöre (!); Syderö: Örnefjæld (!). Hardly a variety of the preceding.

116. **B. uliginosa** (Schrad.).

On earthen walls. Sandö: Grothusvatn (!); peaty ground on Syderö (!).

117. **Lecidea parasema** Ach. with its varr. *latypea* Ach. and *pilularis* Dav.

The main species on trees at Thorshavn (R.). The varr. common on rocks (R., !).

118 (a). **L. contigua** (Hoffm.) and its state *flavicunda* (Ach.). The varr. *platycarpa* (Ach.), *crustulata* (Ach.) (often with sinuose paraphyses), *cyanothalama* Nyl.

On rocks and pebbles. All the forms common; perhaps particularly the main (R., !).

119 (b). **L. lapicida** Ach.

On rocks. Strömö: Varden; Svinö (!); Syderö: Farnien (!).

120 (c). **L. lithophila** Ach.

On rocks. Common (R., !).

L. paratropha Nyl. in Rostrup's Fær. Fl. p. 100 et Hue Addenda No. 1240 has characters common both with *L. lapicida* and *L. lithophila*. Can hardly be well defined.

121 (d). **L. polycarpa** Flk.

On rocks. Vaagö: Sörvaagsvatn (!).

The only specimens, in which the thallus gives red reaction when treated with hydrate of potash.

122 (e). **L. confluens** (Web.).

On rocks (!).

The characteristic leaden-blue colour of the thallus is rather common, but blue reaction of the medulla on treatment with iodine is very rare.

123 (f). **L. speirea** Ach.

On rocks. Syderö: Famien (!).

124 (g). **L. Pilati** Hepp.

On rocks. Strömö: Thorshavn (!).

125 (h). **L. plana** Lahm.

On rocks. Syderö: Famien (!).

126 (i). **L. auriculata** Th. Fr.

On rocks. Syderö: Famien (!).

The spores of the type are very variable, often elongate, but in our specimens broadly ellipsoid.

All these variations from No. 118 to 126 — or if the greater part of them be termed types, then certainly these types are not limited the one from the other. The *L. contigua* with its varieties is most common, sometimes with large, difform or monstrosously lobed apothecia, as the *L. subumbonata* Nyl. on Malinsfjæld in Viderö (!).

127. **L. elata** Schaer.

On rocks. Syderö: Örnefjæld (!), Kvalbö (!).

Perhaps the *L. theiodes* from Thorshavn mentioned by Carroll in Journal of Bot. 1867 is this species.

128. **L. atroferrata** Branth, Grönlands Lichen Flora (Meddel. om Grönland, XVIII, p. 503), with the var. *Dicksoni* (Ach.).

On rocks. The species and var. on Bordö: Klakken (!). The var. on Sandö (!); Viderö: Malinsfjæld (!).

129. **L. erratica** Koerb., *L. sarcogynoides* Rostr. p. 100.

On rocks. Nolsö; Strömö (R.).

130. **L. sylvicola** Flot.

On rocks. Vaagö: Bosdalafof (!).

Very much like the above, in fact so much that it can hardly be regarded as a distinct species.

131. **L. pycnocarpa** Koerb.

On rocks. Sandö: Grothusvatn (!).

132. **L. alpestris** Sommerf., *L. Dovrensis* Nyl. Rostr. p. 100.

On the ground. Syderö: Kvalbö (R.).

133. **L. assimilata** Nyl.

On the ground. Here and there (R., !). In the Færöes as elsewhere more frequent than the above.

134. **L. subconfusa** Nyl. in Rostr. p. 101 et Hue Add. No. 1192.

On boulders. Strömö: at Thorshavn (R.).

Nylander himself thinks that it is related to the above, but that would really be very confusing (it grows on stone).

135. **Bilimbia squalescens** (Nyl.); Toninia Th. Fr. Scand. p. 340; *Lecidea simplicior* and *Dufourei* Nyl., *Thalloidima rimulosum* Th. Fr. Arct., Rostr. Færöernes Flora p. 99.

Among mosses on the ground. Strömö: Skjællingfjæld (R.; Syderö: Örneffjæld (!); Svinö (!).

136. **B. cumulata** (Sommerf.).

Among mosses on the ground. Bordö: Klakken and Höjefjæld (!); Kalsö: Blankeskaaleffjæld (!); Viderö: Viderejde (!).

137. **B. lenticularis** (Ach.).

On rocks. Strömö: Skansetangen (!).

B. Stereocaulorum (Th. Fr.) in Vaagö on *Stereocaulon coralloides* (R.) is a parasite of the genus *Scutula*. Also *B. arthoniza* (Nyl.) with *Lecidea parasema* at Thorshavn (R.) is a parasite, *Conida intexta* (Almqv.), attached to the apothecia of the *Lecidea*.

138. **B. sphaeroides** (Dicks.).

Among mosses. Strömö: Thorshavn and Kirkebö (R.). Rostrup mentions a var. *leucococca* Nyl. from Syderö: Norbes Ejde.

139. **B. sabuletorum** (Flk.), *B. hypnophila* Ach. Th. Fr.

Among decayed mosses. Syderö: Kvalbö (R.).

140. **B. milliaria** (Fr.).

On the ground. Syderö: Kvalbö (R.); Strömö: Varden (!); Viderö: Vedvig (!).

141. **B. caudata** (Nyl.), *B. lugubris* (Sommerf.) Th. Fr.

On rocks. Kunö (!).

142. **B. aromatica** (Sm.).

On church-walls. Strömö: Kirkebö (!).

Although Rostrup's specimens from the same peculiar locality and habitat, which Nyl. has determined as *Lecidea Færöensis* n. sp., are not to be had for examination, yet according to the descriptions

in Rostr. Fær. Fl. and in Hue Add. Nr. 1029 they must probably be referred to *B. aromatica*.

143. *Gyalecta foveolaris* Ach.

Over decayed mosses. Strömö: Skansetangen (R.); Syderö (!); Österö: Ejde (R.).

144. *Bacidia squarrosa* (Ach.), *B. squalida* (Ach., Nyl.).

On the ground over decayed mosses. Bordö: Höjefjæld (!); Vaagö: Sörvaagvatn (!).

145. *B. subfuscata* Nyl.

Drift-wood, mahogany. Syderö: Vaag Ejde (!).

146. *B. albescens* (Arn.), *B. arcentina* var. *chlorotica* Nyl. Rostr. p. 102.

Syderö: Norbes Ejde (R.).

147. *B. inundata* (Fr.).

On stones. Sandö (R.); Syderö (R.); Viderö (!).

148. *B. umbrina* (Ach.).

On boulders. Strömö: Thorshavn (R.); Syderö: Famievatn (!).

B. vacillans Th. Fr. et Almqv. on *Sphyridium byssoides* at Kvalbö on Syderö (R.) is a parasite, now called *Mycobacidia* Rehm.

149. *Lopadium fuscoluteum* (Dicks.).

On the summits of mountains on the ground over decayed mosses. Bordö: Höjefjæld (!); Hestö (R.); Strömö: Bodlafjæld (!); Vaagö: Rensatinder (R.); Viderö: Malinsfjæld (!).

This notable lichen is widely, but thinly scattered over the subarctic zone near the sea, as Northern Norway, the Scotch Highlands, the Færöes, Iceland, S. Greenland, the Behring Sea.

150. *Buellia disciformis* (Ach., Nyl.).

Over decayed mosses. Kunö (!); Strömö: Velbestad (!).

151. *B. coniops* (Wahlenb.).

On rocks. Here and there on several of the islands (!).

152. *B. myriocarpa* (D. C.).

On rocks, rather common (R., !). On drift-wood, mahogany; on Syderö: Vaag Ejde, with thick thallus and brownish margin (!).

153 (a). *B. badioatra* (Flk.).

On rocks, also pebbles. Common (R., !).

154 (b). *B. chlorospora* (Nyl.).

On rocks; here and there (!).

155 (a). *B. spuria* (Schaer.) Th. Fr.

Strömö: Thorshavn (!).

156 (b). **B. sororia** Th. Fr.

Sandö: Grothusvatn).

The two preceding differ only in the reaction of the medulla when treated with iodine (presence of starch) and ought perhaps more properly to be united under one name. *B. urceolata* Th. Fr., parasitic on various crusts (R.), must be considered as a *Leciographa*.

157. **B. alboatra** var. **epipolia** (Ach.).

Strömö: Ruin of the church in Kirkebö (!).

158. **B. geographica** (L.).

On rocks and stones. Rather common (R, !).

159 (a). **B. petraea** Wulfen.

On rocks. Common (R, !).

All the specimens from the Færøes are *Rhizocarpon obscuratum* according to the nomenclature of Th. Fr.

160 (b). **B. amphibia** (Fr.).

On rocks that are often wet. Syderö: Vaag Ejde (!).

161 (c). **B. calcarea** (Weis.).

On basaltic rocks. Syderö: Vaag (!).

162. **B. Oederi** (Ach.).

Strömö (R.).

c. *Graphideae*.

163. **Opegrapha atra** var. **calcarea** Turn.

Strömö: the redoubt at Thorshavn (!); Syderö: Famien (!).

f. **virescens** Nyl.

Skuö (R.); Syderö: Skaalefjæld, Famien (R.).

164. **O. vulgata** f. **lithyrga** Nyl., Stizenb.

On basaltic rocks. Syderö: Vaag, in a ravine (!).

It has the aspect of *O. herpetica*; Spores fusiform, 4—8 septate, 18—20 μ .

165. **Arthonia radiata** (Pers.).

On trees in gardens at Thorshavn (R.).

166. **A. lapidicola** Tayl.

On rocks on Syderö (R.).

d. *Verrucarieae*.

167 (a). **Dermatocarpon miniatum** (L.).

Here and there on rocks (R., !).

Var. **complicatum** (Sw.).

Kalsö: Blankeskaaleffjæld (!); Sandö: Grothusvatn (!); Strömö: ravine at Gjanöre (!); Syderö: Famien (R., !); Österö: Andefjord (R.); Fuglefjord (!).

168 (b). **D. fluviatile** (Web.).

On rocks and boulders in the water. Kunö (!); Nolsö (!); Sandö (R.), decolorated through immersion.

169. **D. rufescens** (Ach.).

On gravelly ground among mosses. Hestö (R.); Sandö (R., !); Syderö: Vaag (!), Porkere (R.); Österö: Næs (!).

170. **D. hepaticum** (Ach.).

Syderö: Kvalbö (R.).

171. **Normandina laetevirens** (Borr.).

On peaty ground. Nolsö (R.); Svinö (!); Syderö: Punthavn (!), Frodebö and Kvalbö (R.); Vaagö: Sörvaagsvatn (!).

172. **Endocarpon cinereum** (Pers.), *Verrucaria tephroides* (Ach.) Nyl.

Ground, particularly when peaty. Nolsö (!); Strömö: Gjanöre (!), Sandegærde and Thorshavn (R.); Syderö: Norbes Ejde (R.), Tværaa, Kvalbö and Vaag Ejde (!); Vaagö: Sörvaagsvatn (!).

173 (a). **Verrucaria rupestris** (Schrad.) and f. **muralis** Ach.

On rocks. Strömö: Thorshavn (R.), Kirkebö (!); Syderö: Vaag Ejde (!).

174 (b). **V. nigrescens** (Pers.).

On rocks. Syderö: Örneffjæld (!).

175 (c). **V. margacea** Wahlenb.

On rocks by the shore. In some localities very common (R., !).

Its thallus can be spotted with dark olive and light grey. The var. **aethiobola** Wahlenb. originates from this and the two above types, and has generally a darker and thinner thallus. It is often more common at a somewhat higher station than the true *margacea*.

176 (d). **V. maura** (Wahlenb.).

Abundant everywhere on the rocks by the sea-shore.

Varies slightly, but has sometimes a brownish crust: var. **fuscescens**, or a rough punctated crust: var. **aractina** (Wahlenb.).

177 (e). **V. mucosa** Wahlenb.

On rocks below high-water line, common.

The type referred to by Wahlenberg has a thallus which varies from brownish-grey to light olive. The latter is without reason separated under the name of *V. laetevirens*.

178 (f). **V. striatula** Wahlenb.

Among the above in the sea, also on pebbles.

The names *halophila*, *microspora*, *vitricola*, etc. are quite superfluous for this type.

The types 176—178 are more particularly marine. Most of the material is collected by Mr. Börgesen in the neighbourhood of Thorshavn. On the boulders on the calmer Danish shores of the Baltic there is a naked zone extending from the ordinary level of the sea to a height of 30 centim., and then there usually follows a very regular zone of *V. maura* of equal height; but on the open shores of the Færøes, where the waves dash over the rocks to a height of 10 metres or more, the spray rising much higher, Mr. Börgesen has found both *V. maura* and green algæ at and above the height to which the spray dashes.

179. **V. epigaea** Ach.

Österö: Næs (R.).

180. **Sagedia pyrenophora** (Ach.), *S. Sprucei* Rostr. p. 104.

On rocks by the shore. Skuö (R.).

181 (a). **S. grandis** Koerb.

Strömö: Thorshavn (R.).

182 (b). **S. chlorotica** (Ach.).

On rocks. Strömö: Varden (R.); Syderö: Vaag Ejde (!).

183 (c). **S. lectissima** (Fr.).

On rocks. Nolsö (!); Syderö: Famien (!).

The specimens of the above-mentioned *S. chlorotica* from Syderö come near *lectissima*.

184. **Polyblastia umbrina** var. *clöpima* (Wahlenb.).

Spores 1—3, 25—45 μ .

On rocks by the shore. Skuö (R.); Strömö: Kirkebö (!); Syderö: Kvalbö, Famien (!).

185. **P. theleodes** (Sommerf.).

On rocks. Nolsö (R.); Strömö: Thorshavn and Kirkebö (R.); Syderö: Örnefjæld (!), Trangisvaag (!).

186. **P. terrestris** Th. Fr.

On the ground and on pebbles; common according to Rostrup. Nolsö (!); Syderö: Malinsfjæld (!).

187. **P. Helvetica** Th. Fr.

Strömö: Gliversrejn (R.), determined by Th. Fries.

188. **P. intercedens** (Nyl.), *P. hyperborea* Th. Fr.

On rocks. Strömö: Skjællingfjæld (!), ravine near Vestmanhavn (!); Syderö: Famievatn (!); Vaagö: Sörvaagsvatn (!).

189. **Microglena corrosa** (Koerb.), *Verrucaria gibbosula* Nyl.

On rocks. Syderö: Famievatn (!). Hardly differing from *M. reducta* Th. Fr.

190. **Thelocarpon epiboloides** Nyl.

On the thallus of *Sphyridium byssoides* at Kvalbö on Syderö (R.). »Est tantum forma *Th. epibol.*« Nyl.

191. **Endococcus erraticus** (Mass.).

On the thallus of various *Lecideas* (R.,!).

192. **E. gemmifer** (Tayl.).

On *Buellia badioutra* at Thorshavn (R.).

III. Epiconiaceae.

193 (a). **Sphaerophon coralloides** Pers.

On rocks and ground. Rather common, but seldom vigorous (R.,!).

The blue reaction of the medulla when treated with iodine is usually faint or dubious.

194 (b). **S. fragile** Pers.

Often with the above, especially on the mountains (R.,!).

When the preceding species — those that are numbered — are summed up, the whole number amounts to 194. About a dozen of the 142 species mentioned in Rostrup's list are excluded from my present list, either because they are parasites or because they must be regarded as varieties. If we follow Th. Fries in his limitation of species, the number of Færöese species will amount to about 220, while if Nylander and Crombie be followed the total sum will amount to about 300.

GENERAL REMARKS ON THE LICHEN-VEGETATION.

What strikes us most with regard to the fruticulose and foliose species — especially with those growing on the ground — is that they seldom attain their normal size and development; they rarely occur in large tufts, but generally have a rather stunted look as of plants living under unfavourable conditions.

This may be accounted for more particularly by the fact that they are kept down — as Mr. J. Hartz observes — by the all-dominating mosses, which are still better adapted than the lichens to profit by the moist atmosphere. It may also be that in a few localities the violent winds exercise an unfavourable influence. Further, they are nibbled by upwards of 100,000 sheep that in the Færøes live all the year round in the open air, and which, naturally enough, eat whatever is accessible; but the lichens, however, are not so numerous that they can have great importance as fodder, as when they occur gregariously on lichen-heaths.

If we ask for floristic differences between the northern and southern islands, they are found more particularly in the distribution of phanerogams and other plants; regarding the lichens the only observation to be made is that two very characteristic species *Alectoria nigricans* and *Lopadium fuscolenum* are found in the northern islands only. The former is more arctic than subarctic and the latter is more subarctic.

We may also compare the Lichen-flora of the Færøes with those of the nearest countries, Scandinavia, Great Britain and Iceland. Two species are found in the Færøes and not in Scandinavia, viz. *Nephroma lusitanicum* and *Soloria bispora*. — Even if these types are not really distinct species, yet they are notable and characteristic. The former is decidedly Atlantic, the latter appears to be more subarctic and arctic.

Four Færøese species are not found in Great Britain, viz. *Pannaria elaeina*, *Squamaria straminea*, *Rinodina turfacea*, *Bilimbia cinnulata*. These species may be characterized as subarctic and arctic. Here we may remark that the fact of Crombie in »Lichens of Britain«, I, 1894, having hardly mentioned any localities from the Shetlands, Ærksneys and Hebrides — though otherwise he gives a great many localities — seems to indicate that these islands must be unexplored as far as their lichen-vegetation is concerned, and consequently we may suppose that the last-named lichens are to be found there.

The following Færøese lichens have not been found in Iceland: —

<i>Leptogium saturninum</i> ,	<i>Stereocaulon coralloides</i> ,
— <i>subtile</i> ,	<i>Nephroma lusitanicum</i> ,
<i>Alectoria bicolor</i> ,	<i>Sticta amplissima</i> ,
<i>Cornicularia tristis</i> ,	— <i>herbacea</i> ,

Sticta pulvinaria,— *fuliginosa,**Squamaria cartilaginea,**Sphyridium placophyllum,**Bilimbia aromatica.*

The majority of them is most frequent in the woody temperate regions of Europe.

By the term »subarctic« I mean countries, analogous to the subalpine, where but little of the soil is under cultivation, and where the woods still are dense, but situated far apart and stunted by cold and snow (not by wind and dry air) as is the case in Iceland and Northern Scandinavia. As to the phyto-geographical position of the Færøes, they may, also with regard to their lichen-vegetation, be placed between the subarctic and the woody regions of Europe with an element of Atlantic growth, in perfect conformity with their geographical position.

CORRIGENDA

- Page 3, line 16 from bottom, for *Aug. 15* read *July 15*.
- 9, — 18 — — , - *Sandsbugt* read *Sands Vaag*.
- —, — 8 — — , - *se* read *see*.
- —, — 2 — — , - *on* read *in*.
- 10, — 2 — top, for *se* read *see*.
- 12, — 7 — bottom, the sound is named not *Sundelaget* but *Sundene*.
- 13, — 15 — , for the dale read the valley.
- 14, — 5 — — , - *Vigs* read *Vige*.
- 22, — 14 — top, for *only the cattle and horses* read *only the cattle*.
- 29, — 29 Fig. 17, for »*Stattaraliuder*« read »*Stattaratiude*«.
- 32, — 11 and 9 from bottom, for *melereological* read *meleorological*.
- 42, — 2 from bottom, for *convenience* read *convenience*.
- 52, — 16 — — , - *glaborsily* read *glabrousily*.
- 55, — 16 — top, for *Lowers* read *Lawers*.
- 60, — 11 — - , - *facs.* read *fasc.*
- 61, — 7 — - , - *developeement* read *development*.
- 64, — 12 — - , - *rappelle* read *rappelle*.
- —, — 15 — — , - *Glypersrejn* read *Gliversrejn*.
- 66, — 18 — - , - *Hutschinsia* read *Hutchinsia*.
- 67, — 3 — bottom, for *Sandö* read *Strömö*.
- —, — 7 — — , - *Skarvelange* read *Skarvatange*.
- —, — 5 — — , - *Tripolium* read *Trifolium*.
- 76, — 13 — top, for *apinum* read *atpinum*.
- 78, — 1 — bottom, for *Strendre* read *Streuder*.
- 86, — 20 — — , - *poll* read *pollen*.
- —, — 4 — — , - *vivaparous* read *viviparous*.
- 88, — 10 — — , - *Traraa* read *Tvaraa*.
- 95, — 2 — — , - *fiords* read *fjords*.
- 97, — 6 — — , - *this* read *these*.
- 107, — 16 — — , - *stellaris* read *nivatis*.
- 112, — 18 — — , - *crevises* read *crevices*.
- 124, — 6 — top, for *agrees* read *agree*.
- 133, — 20 — — , - *Floerkei* read *Floerkei*.
- 139, — 12 — top, for *succede in gething* read *succeed in getting*.
- 150, — 14 — - , - *indicating cells* read *guides*.
- 159, — 6 — - , - *sheating* read *sheathing*.
- 175, — 14 — - , - *but* read *when*.

Page 199, line 8 from top, for *a few* read *a great part*.

-- 287, — 7 — bottom, for *fra* read *from*.

— 288, — 1 — — , - (*Vaagö*) read (*Syderö*).

Plates V and VI, for «*C. Jensen del.*» read »*H. Lindberg and C. Jensen del.*».

Pages 15, 23, 26 and throughout for *Sands* read *Sand*; pages 16, 48 etc. for *Sallvigsvaġn* read *Grolhusvaġn*; pages 70, 72 for *Sunnbö* read *Sunbö*; for *mountains heights* by Borgeſen read *Höjeffjeld*.

At pages 12 and 14 (and likewise in the accompanying map) for *Sundelaget* read *Sundene*, as *Sundelaget* is not the name of the sound which separates Strömö and Österö; the name of this sound is *Sundene*.

The spelling of the Færöese place-names is not fixed, hence some of the names in the accompanying map are spelt differently to those in other maps of the Færöes.



MAP OF FARÖERNE (THE FARÖES)

from
The Danish Government Survey

1895-99

Copenhagen 1900
København 1900

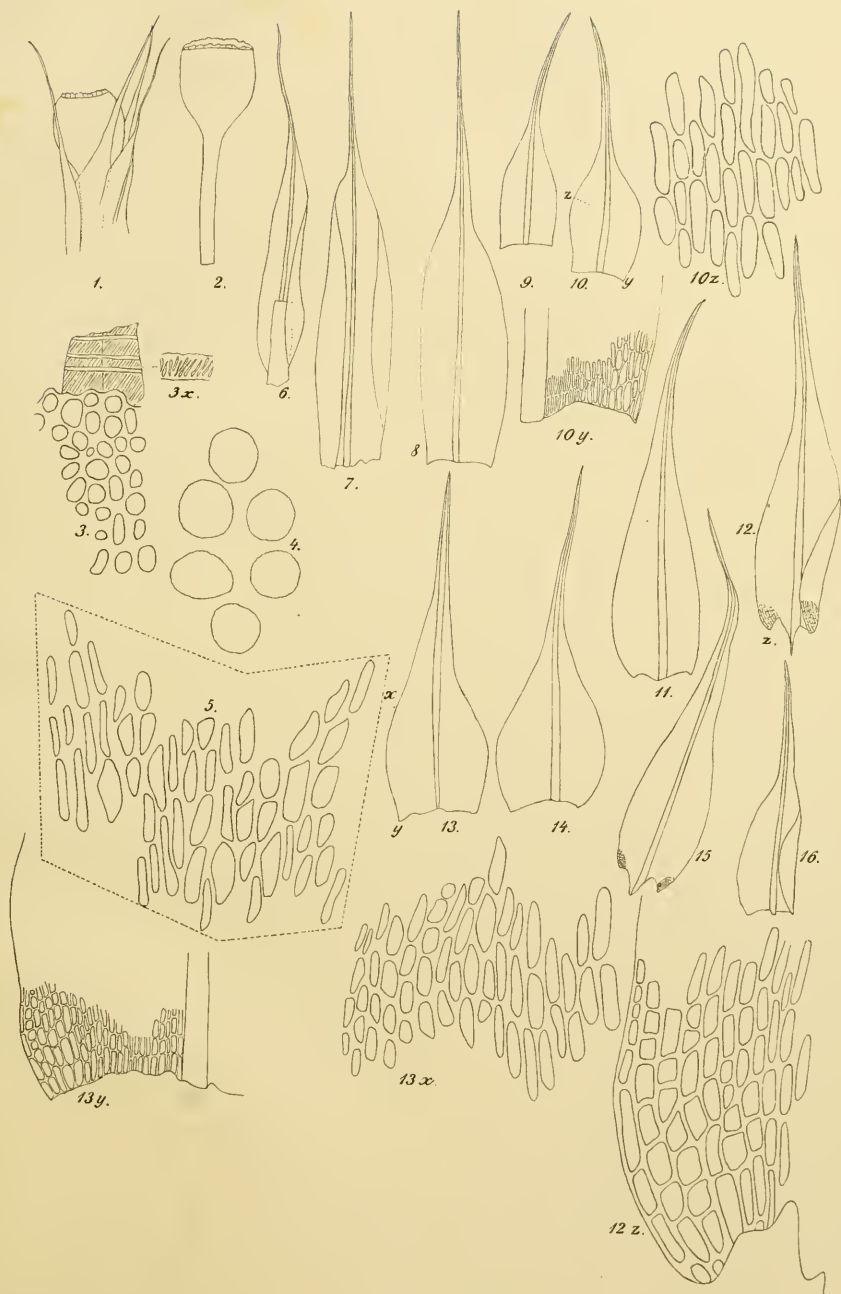




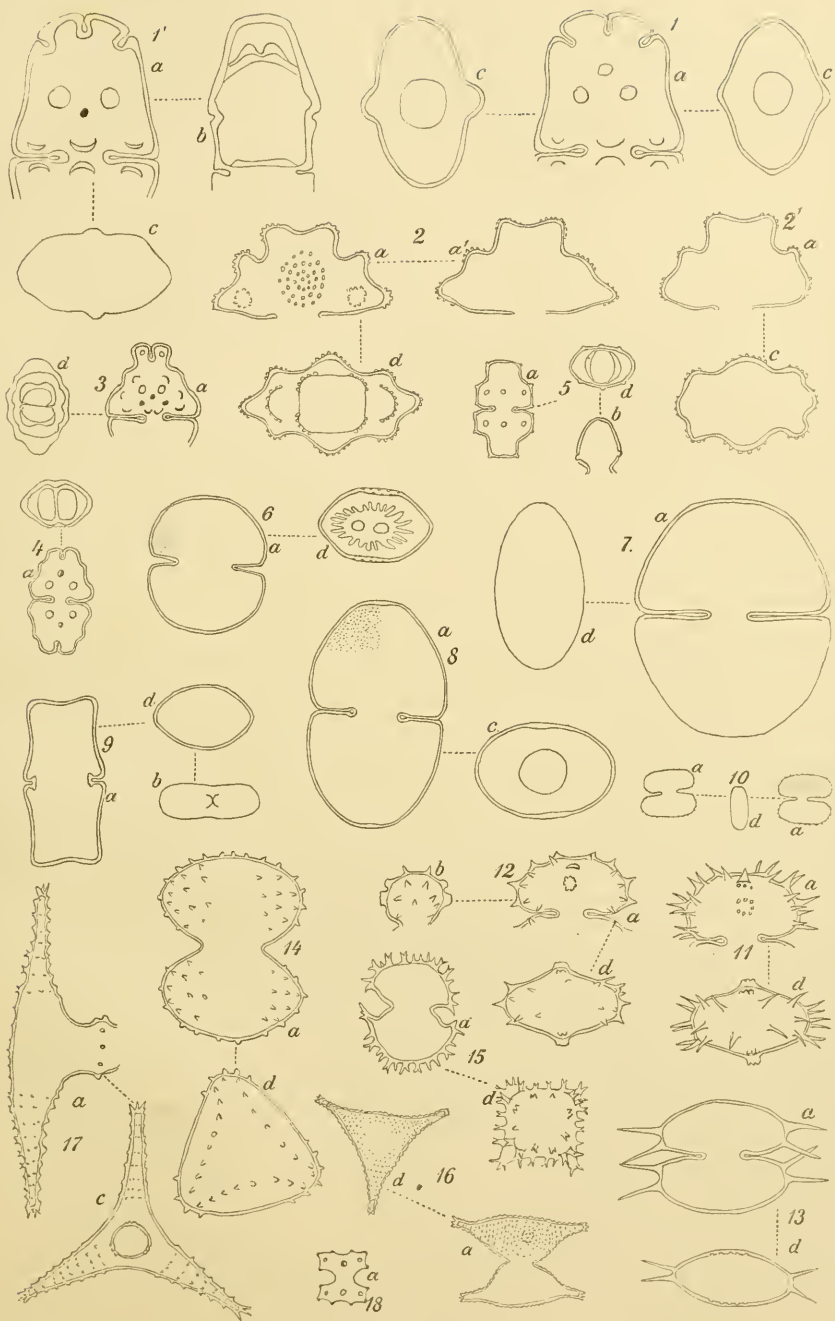
C. Jensen del.

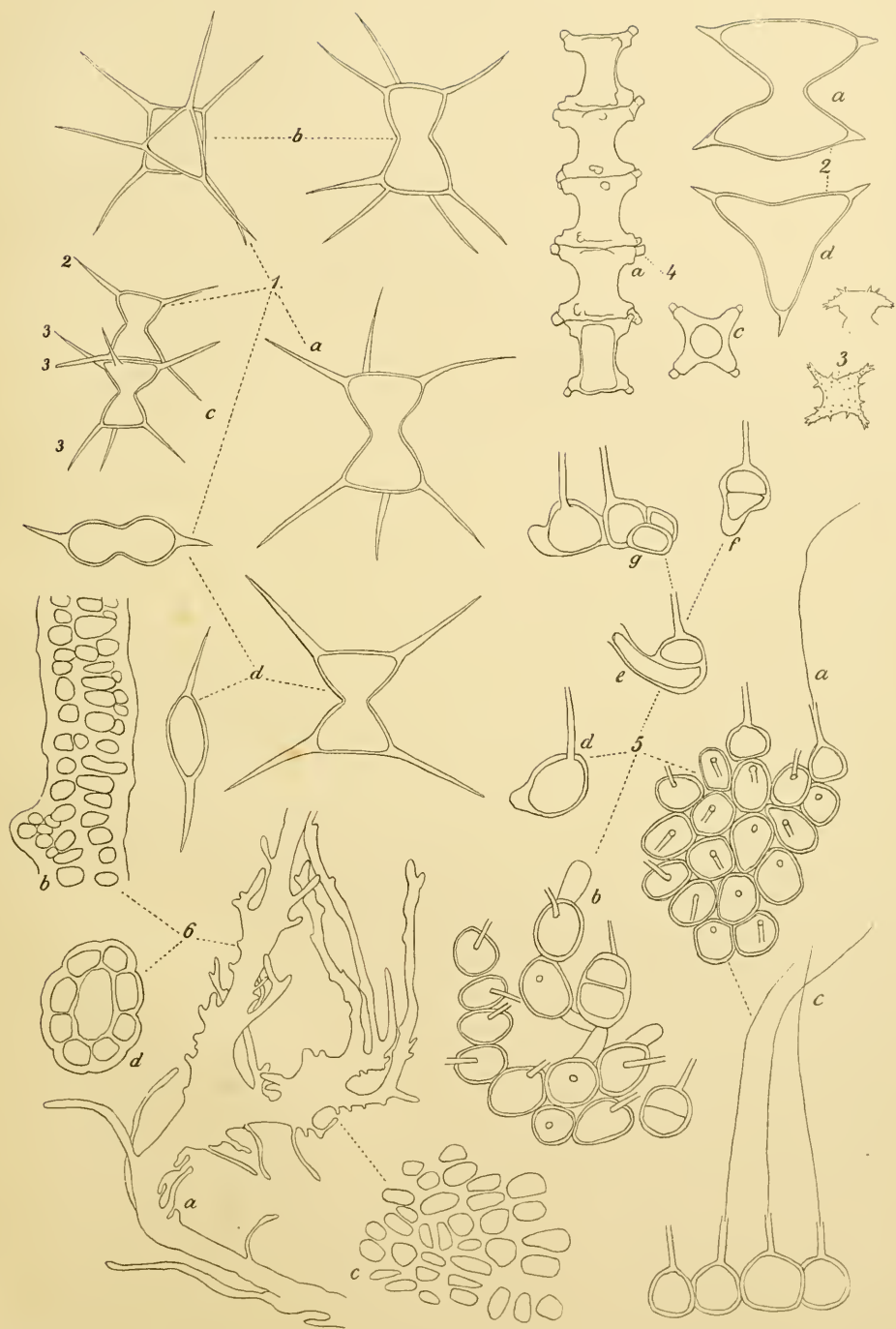


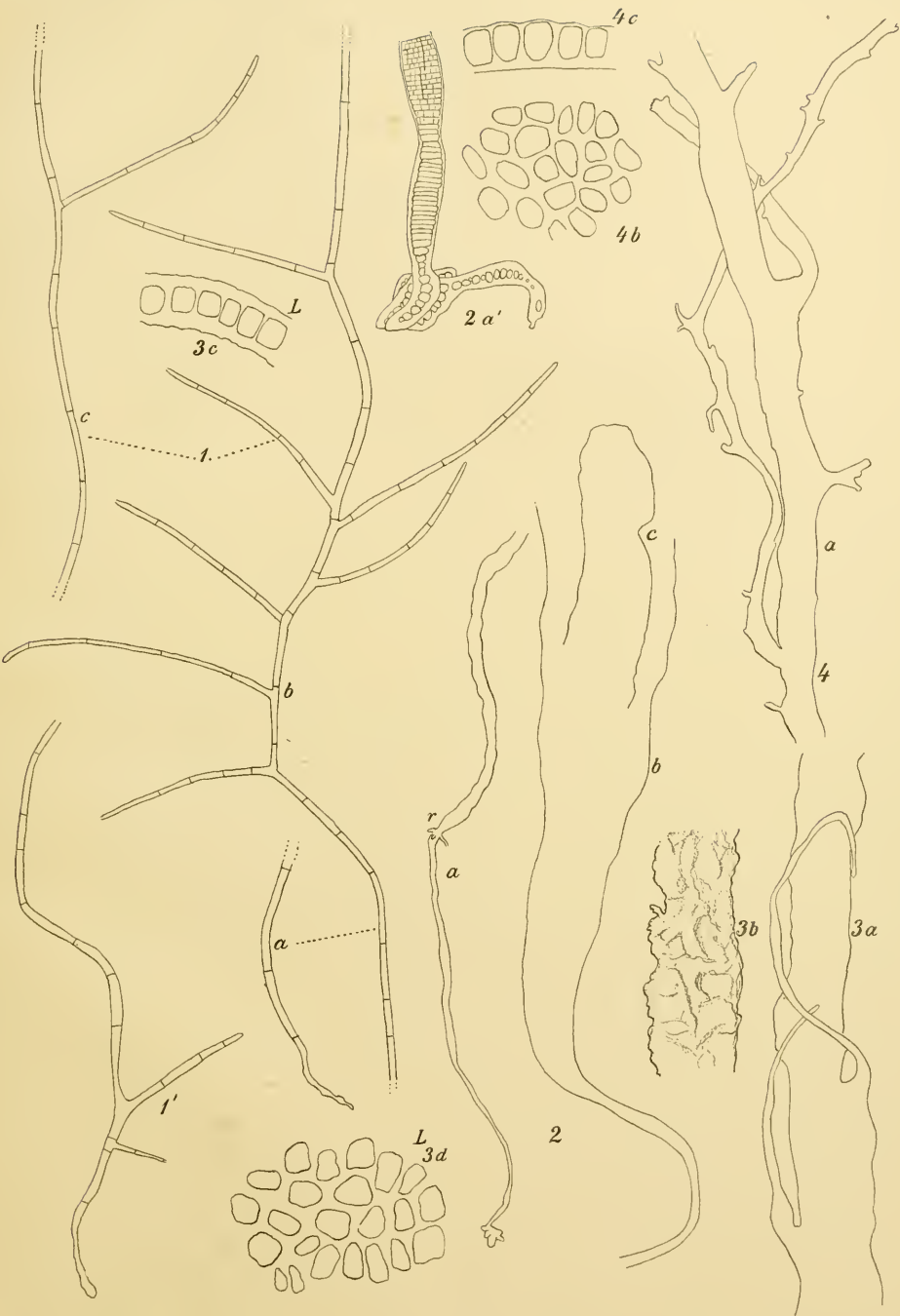


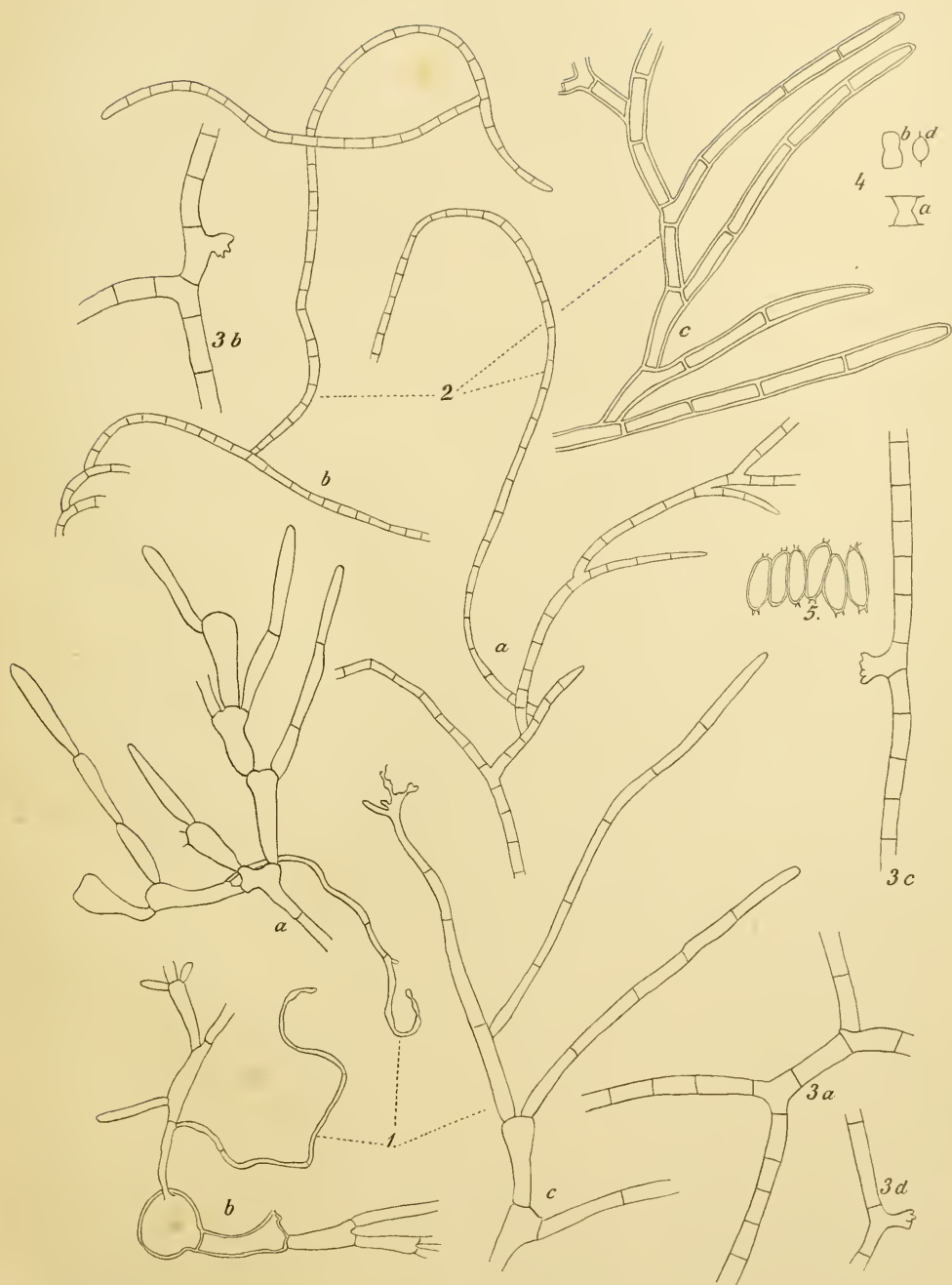












h=let her

